Pests

AND THEIR CONTROL

1947

JUNE

VOL. 15, NO. 6

ORGAN OF THE PEST CONTROL INDUSTRY

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Entomologists
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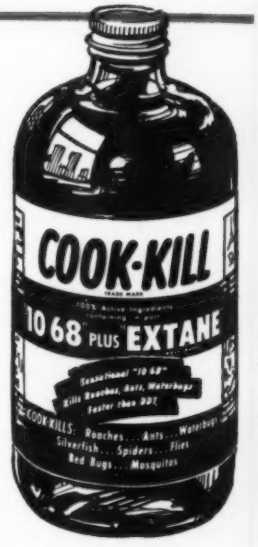

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Pests

and Their CONTROL

Exterminators, Fumigators, Termite Control Operators, Entomologists, Insecticide and Supply Manufacturers

COOPERATING WITH NATIONAL PEST CONTROL ASSOCIATION

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EDITORIAL

Cooperation Means Prosperity

SOME feel that the day of cut-throat competition has passed. The PCO who fails to realize this fact is doomed to follow into the limbo of forgotten things. In many business enterprises, this is already true, but in some, there is still that lack of cooperation. However, we know that our industry has made great strides in improvement and cooperation among fellow-members.

Today is an age of cooperation in every line of human activity. Two heads are better than one, and many heads are better than two. It is the purpose of the NPCA to foster cooperation among its members as well as the industry in general; in exchanging ideas and information to the advantage of all the industry.

To cooperate means more than merely to get along with one another; it means personal interest in your fellow-member or competitor. Perhaps you have found some method of doing business, some way of working with your customers that has been exceptionally helpful and profitable, both to you and to your fellow-members. Did it ever occur to you that your fellow-member also may have discovered something about your business that has never occurred to you?

Wouldn't it be profitable both to you and your fellow-member to exchange ideas? This is the meaning of helpful cooperation. Without this spirit of cooperation, associations fail to function. We well remember the time when every factor even remotely connected with a PCO business was a deep and mysterious secret but this situation has now passed. It has given way to the modern idea of cooperation.

The PCO who insists upon conducting his business on the old plan will soon find that his ideas, unaided by the ideas of others, are insufficient to keep his business prosperous.

The NPCA members have gotten together because they have learned that it pays them to do so; because they have found that cooperation pays larger dividends than the old secrecy policy.

The lone PCO, who scorns to cooperate with his fellow-members, cannot keep pace, because, no matter how good he may be, he cannot equal the combined minds of many members in the same line working together. He may be moderately successful, but he would be even more so, were he in a position to consider the methods and ideas of others who are meeting the same problems that confront him.

If he is moderately successful, the ideas that have built his success would be of value to his fellow-member and make the entire industry more profitable. He, in turn, would share in the increased prosperity of the industry. But by staying out he is restricting the prosperity of the industry and thereby lessening his own profit.

If the PCO is barely making ends meet, then he certainly needs the advice and assistance of the NPCA and his fellow-members. Whichever way he takes it, association together pays. While it may not be necessarily true that divided we will all fail, it certainly is true that united we will stand more firmly.

Selling PCO Service to the Public

"We Got Millions of Them," said the Waiter,

"Millions Now Living Will Soon be Dead",

"Inflation, like Pests Can be Checked and Controlled",

"A Cockroach is but a Name, until You Eat One".

M. A. (SANDY) SANDERSON

These were the captions and headings that recently appeared in The Globe and Mail, a newspaper in Toronto, Canada, and were followed by well-planned and well-balanced stories regarding the importance of pest control service. The stories relate some intensely interesting facts about pest control service, while injecting in a jocular vein the "Pests and Human Relations" side of the industry.

These were but a few of M. A. Sanderson's, ("Sandy" as he was known) of the Reliable Exterminating, Ltd., Toronto, Canada, last contributions to the public regarding his business. "Sandy" was a clever writer and mighty with his pen. He prepared articles and followed through the stories in advertising his pest control service. He did a swell job in making known to the public the paramount importance of pest control service.

Health Officials Cooperating with PCO's Drive on City's Rats

A fine spirit of cooperation is being demonstrated on the part of city health officials with our industry. For some months the Kansas City Mo., health department has felt that some control measures were needed to exterminate rats in the commercial and industrial areas.

Because it was felt that a health menace was involved and to secure better cooperation to control the rodent situation, an ordinance was adopted. In order to have a thorough knowledge as to the method of control, a program was worked out by William J. Dixon, commissioner of sanitation, and Thomas F. Maxwell, administrative assistant to the city manager.

Dr. Lloyd R. Gates, senior public health engineer and Joseph W. Hunt, rodent control consultant of the U. S. Public Health Service were assigned to head the campaign. Since February, Dr. Gates has been laying the ground work for the campaign.

The Pay Way Feed Mills, Inc. offered one of its buildings as a laboratory. Eighteen pest control firms accepted the invitation and participated in the early training. These pest control operators and their men swarmed over the building with sheet metal, lumber, and other material, stopping up every possible means of rat entrance or exit from the building, from basement floor to the roof.

For several days these men took instructions from the health engineers so they would know what to do to meet the specifications. Several blocks in commercial and industrial areas have been surveyed. The method of control will be to rat-proof a block at a time, extermi-

nating all the rats in the block after the proofing, and to follow up with periodic inspections to see that the rat-proofing is effective.

The plan is that health engineers will survey the places and report to the owners the condition of their premises. Each owner then will contract for his own work with one of the pest control firms.

We are happy to report one outstanding and significant feature of this campaign; the development of cooperation among PCO firms. Before the campaign some PCO's were more or less uncooperative, with everyone for himself. However as the campaign developed, the operators became acquainted, discovered the mutual advantage of cooperative efforts and were soon working together like one large family. What one did not have by way of equipment, the other did, and used it. Mr. Dixon expressed his surprise and pleasure at the degree of unity and cooperation shown by all concerned.

It speaks well for an industry, and will strengthen confidence on the part of city health officials, to have this fine spirit of working together on the part of PCO's.

It is gratifying to know that the Kansas City Health Officials have stated that they will not compete with private industry in rat-proofing, or in exterminating work, but have definitely agreed to let this work be taken over by the pest control firms. This is what we call a splendid spirit of cooperation on their part with our industry. And our hats are off to the PCO's who were willing to cooperate and work together with these good city health officials. Another excellent illustration that it pays to cooperate with one another.

GUEST EDITORIAL

Twenty-Five Years In The Pest Control Industry

By F. E. BOHMAN*, Past President, NPCA

Change, it is said, is good for a person. That is true in many cases if one is unhappy in his present environment, but can become a yoke upon his shoulders if not. Many people grow up in an industry and know it from the bottom, while many try working at different jobs until he finds, to his way of thinking, something which appeals to him. Too many people today are square pegs in round holes and are indifferent to change and advancement because their mental attitude has become sluggish. Youth has fire and ambition whereas as one grows older, he is naturally afraid of change as well as being afraid of his future. He has responsibilities which must be his first thought.

F. E. BOHMAN

It has been said that "a little knowledge is a dangerous thing". This quotation is applicable to many PCO's as it becomes apparent that many are self-trained and too few have any knowledge of chemistry and entomology to develop into what we want to call professional. This situation is changing and the urge to do bigger and better things is causing quite an upheaval in our industry's methods. For nearly twelve years now the National Pest Control Association has pounded on the dissimination of knowledge and cooperation of ideas to the end that many universities and colleges have opened their doors to admit the sons of Pest Control Operators and men of our industry into their classes. This will have a decided effect on the type of service we will render in the future.

Ours is a peculiar and necessary job. Not every one is suited to do this type of work, and if anyone feels above the job, you may rest assured that if he does service work, it will be mediocre until he sees the light and the need to do just what he is doing. To render a sanitary service, which means better health and protection from filth and disease, is a noble work and this is the main objective in Pest Control. Of course, we must eat humble pie at times and if in the course of a years' time we are able to meet at a convention this meeting is for further study on newer ideas and a combined vacation also, relaxation from a trying year. This has its reward also in knowing ones fellow operators and those friendships are cherished forever. Our Pest Control Family has grown since we first organized our association. I think its members have also grown with the Association. Surely, this is worthwhile!

The National Pest Control Association must have new blood to exist as it can easily become a brain child of a few which is the last thing that its members wish. Therefore, any new or prospective member must enter into the life and activity of the association. Who knows but what we may have another Pasteur, or some entomological genius hiding under the proverbial bushel. The great joy of doing is an excellent tonic for those who have not tried and is one way to keep alive the spirit of progress and ambition. Learn to do more of it and to those who have not volunteered any of their ideas and help, may I urge you to do so.

I recently heard a gentleman say that he was always an introvert but by hard work and the help of three things in his life he feels he has licked it. First, he married his good wife, then he joined a Rotary Club, and later entered into politics. Those three things have helped him to a more enjoyable life and he feels have allowed him to share his knowledge with others, thereby enriching himself with friends of understanding nature. One cannot always think of himself, however. This first lesson well learned will develop a business character which will spread its mantle over all workers.

When a young man chooses our profession as his life's work, what are we supposed to do? First, we should feel honored that he has made this choice and that it is looked upon as a real necessity also that it has prospects of a good living. Essentiality was demonstrated in the years of the war and still gets an A1 Billing of importance. Second, health and welfare of the public are paramount issues and it remains with us to keep them there.

Constructive criticism is our right and if we find a new operator cutting corners and trying to gouge out an unreasonable price, or doing something unethical, it is our duty to the Association to report such infractions.

We build through local associations and urge national membership and in so doing help ourselves. The older companies have headaches and a responsibility to the industry and if we keep abreast of the times and train the younger men, we are fulfilling a worthy chore. If I have learned anything it is that through friendship and the desire to help another, one gets all the profits possible out of his work. Know your job, know your competitor and know your association. It's a small world, and getting smaller, brother! "Change, therefore, is the cutting edge of Growth".

*General Manager, The Birchard System, Inc., Hartford, Conn.

Important Household and Dooryard Pests

By PROF. A. E. MICHELBACHER, University of California, Berkeley

THE time available for the discussion is so short that no attempt will be made to cover the entire subject that relates to household and dooryard pests. Certain phases of the problem are considered by other speakers on the program. In this section fabric insects, stored product pests, and dooryard pests will be discussed.

Fabric Insects

Fabric insects are among the most important pests found in homes and commercial structures such as hotels and warehouses. They are likely to occur in any environment which is satisfactory for their development. If conditions are not rendered unsuited for their activity, or if incipient infestations are not located and immediately destroyed, serious damage is likely to result. Fabric insects must be carefully guarded against, because the materials they attack are often of great value. The important groups of insects that attack fabrics and related products are carpet beetles and clothes moths. Of less concern are silverfish, fire brats, spider beetles, cigarette beetles and crickets. The important pests are mostly small, and unless carefully looked for are likely to go unnoticed since they prefer to live and develop in secluded and undisturbed locations. Because of these habits, they frequently cause serious damage before their presence is recognized. In general, only articles that contain animal products of one kind or another are seriously attacked by the most important fabric insects.

Clothes Moths:—There are several species of clothes moths that cause severe damage. The two most important are the webbing clothes moth, **Tineola biselliella** Hum., and the casemaking clothes moth, **Tinea pellionella** L. Both of these are very small. The adults with wings folded measure only about one-quarter inch in length. The adults of the webbing clothes moth are buff-colored and have a satiny sheen. The hairs on the head stand upright and are reddish in color. The casemaking clothes moth is similar to the above except that it has indistinct dark spots on the wings, and the hairs on the head are lighter in color. These species are not strong fliers, and are not attracted directly to lights. They prefer darkness, although they will flit in and out about the outer margins of lighted areas. When infested fabrics are disturbed, they run rapidly or fly to conceal themselves in folds or other secluded places. This ability to disappear is a very characteristic response and is developed to a marked degree. The moths live for a period upward to a month and in a lifetime a female may lay as many as 300 eggs. They do not feed on fabrics and damage is done by the larvae or caterpillars.

Depending upon temperature, the eggs hatch in about 1 to 4 weeks. The newly hatched larvae feed and spin shelters of silken threads. The larvae of the webbing clothes moth spins tubes over or through the materials they infest, while the larvae of the casemaking clothes moth construct a silken parchment-like case which they drag along wherever they go. When disturbed they retreat into the case for protection. The larvae of the webbing clothes moth live within the silken burrows which they construct, and are capable of moving rapidly through them. When full grown the larvae of both species measure about 3/8 of an inch in length. They have pearly white bodies and dark heads. On some foods the bodies may be nearly translucent, while on others they become more opaque and the color somewhat dingy. When mature, the larvae transform into brown pupae where transformation to the adult occurs. After this process is complete, the moths emerge, mate and give rise to a new generation.

The length of time to complete a life cycle is dependent upon a number of factors which include temperature and quality of food. The natural food of clothes moths consists of unprocessed material such as pollen, hair, feathers, wool, fur, insect remains and other natural dried animal products. On these foods and under favorable temperature conditions development is most rapid and a life cycle may be completed in less than 3 months. Any accumulation of these materials in cracks in the floor or other protected places is very likely to be infested and furnish breeding places within homes or other structures. During the manufacturing process, changes in raw animal products are often brought about which render them less suitable as a food for moths. Some processed goods furnish such a poor source of food that clothes moth larvae develop with a great deal of difficulty and a year or more may pass before they are able to complete their development. In this regard, Back (1940) stated, "If clothes moths matured as well upon all suitings and dress goods as they do upon raw animal products, such as undyed fur, casein, fish meal, dead insects, etc., man would find the fight against them far more difficult than now when he benefits from a natural mortality among moth larvae of from 90 to 99 per cent on much of his clothing." Further, Heal (1942) states that clean wool alone is not a satisfactory diet for normal development of the larvae of the webbing clothes moth or the black carpet beetle. Geigy and Zinkernazel (1941) also observed that clothes moth larvae developed very slowly on wool that had been washed and thus deprived of fatty material and Griswold (1941) was unable to rear the webbing clothes moth on clean woolen fabrics.

Carpet Beetles:—There are a number of carpet beetles that cause serious damage. Among the more important in California are the varied carpet beetles, **Anthrenus verbasci** (Linn.), the bird-nest carpet beetle, **Anthrenus lepidus** Lec. and the black carpet beetle, **Attagenus piceus** (Oliv.), These are small oval somewhat flattened insects with short legs. The varied carpet beetle and the bird-nest carpet beetle are similar in appearance and measure about 1/8 of an inch in length while the black carpet beetle is about 3/16 inch long. The former two are mottled black, brownish and white, while the latter species is all black. The larvae of carpet beetles are thickly clothed with hairs of several lengths. The larvae of the varied carpet beetle and the bird-nest carpet beetles are short, robust, stubby and have the hairs arranged in a neat pattern, but protruding outward in a number of directions. The larvae of the black carpet beetle are elongate, reddish brown above, pale beneath and have a tuft of very long hairs.

Usually there is but a single generation a year, and all damage is done by larvae. Adult beetles fly readily, are attracted to daylight and may collect at windows. They like sunlight and during their active period from early to late spring they may be col-

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lected in large numbers on flowers where they feed on pollen and nectar. Linsley (1946) observed that some species which had not fed on pollen and nectar laid fewer viable eggs, while other species laid no eggs at all. Thus it appears that in most cases at least, pollen and nectar are necessary for the normal development and egg laying.

As with clothes moths, natural foods are more favorable for the development of carpet beetles than are most processed materials. They are likely to be found in nature wherever materials of animal origin occur in protected places such as accumulation in rodent nests, bird-nests, insect nests, bedding places of animals, insect remains under bark of trees, etc. These natural breeding places are important sources for furnishing infestation of homes and other buildings. Lindsey (1946) stated, "Furthermore, it would appear that both carpet beetles and clothes moths are far more abundant in nature than they are in man-made structures and evidence available at this time suggests that the household is actually a relatively unfavorable environment, at least for carpet beetles, and foci for infestations are frequently outside of the structure, a fact which must be clearly in mind if a control program is to succeed." Although products of animal origin furnish the main source of food for the larvae of carpet beetles, there are some species that can complete their development on plant material such as pollen or certain cereal products. Linsley (1946) reared the varied carpet beetle, **Anthrenus verbasci** (Linn.) and the rodent nest carpet beetle, **Attagenus schafferi** Herbst, on pollen and whole wheat flour, but was unable to do so with the bird-nest carpet beetle, **Anthrenus lepidus** Lec.. The black carpet beetle, **Attagenus piceus** (Oliv.) is known to be able to develop in certain stored products.

Unlike the adults, the larvae of carpet beetles prefer dark, secluded, undisturbed locations in which to develop. It is in such environments that they are likely to do the greatest amount of damage. Injury to household furnishings is almost entirely confined to products made of animal material. However, objects manufactured from non-animal products may be seriously attacked. Patton (1945) reported nylon very susceptible to damage by the larvae of several species of carpet beetles, especially **Anthrenus verbasci** (Linn.)

Carpet beetle larvae spin no webbing and this fact can be utilized in distinguishing their injury from that done by clothes moths. Also, in their development the larvae molt a number of times and their hair-covered cast skins also help in identifying their work.

The hide beetle, **Dermestes vulpinus F.** sometimes seriously attacks skins and furs. In this regard Rees (1943) stated, "At one time in London the larvae of **Dermestes vulpinus** F. so injured skins and furs stored in warehouses that a reward of 2,000 francs was offered for an effective means of destroying them."

Miscellaneous Fabric Pests—There are a rather large number of insects that will attack fabrics under certain conditions. However, most of them are far more important as general household or stored product pests than they are as fabric pests.

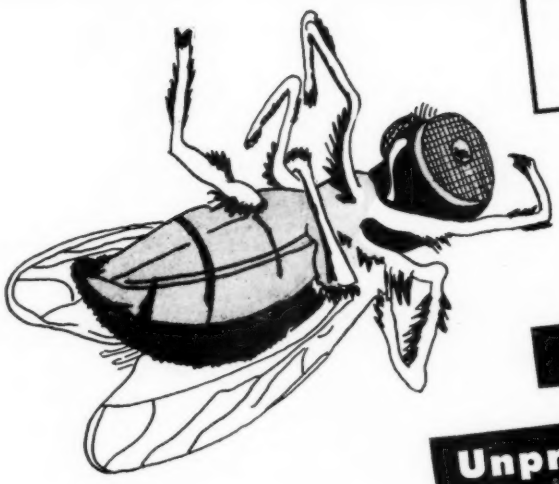
Silverfish and fire brats sometimes cause serious damage to fabrics. These small, wingless, elongate scaly insects are widely distributed. They are fast runners and can be distinguished by their pair of long antennae and the three prominent filament that protrude from the tail end. Silverfish are uniform silvery in color while fire brats are mottled with darker spots. Although silverfish prefer warm damp places, they may occur in almost any portion of a building. The fire brat is much more heat-loving and is found most abundant and is fairly well limited to heated basements or similar locations. The food of silverfish consists mostly of vegetable matter. Back (1938) reported that investigations indicated that silverfish prefer vegetable foods having a high starch or sugar content and are very fond of moist wheat flour. Where conditions are favorable. they may be very destructive by feeding on the sizing in paper, book bindings, wall paper or on any other materials where glue or starch is present. Fabrics of plant origin are fed on to varying degrees. Thin starched materials may be seriously damaged, as are linen and rayon goods. Mallis (1942) reported on an experiment in which he subjected six undyed textiles to the attack of the silverfish **(Ctenolepisma urbani).** The materials tested were linen, cotton, rayon, lisle, silk and wool. The fabrics were placed under an auditorium that was heavily infested with silverfish. The results at the end of six weeks showed that all the vegetable fibers had been fed upon, while those from animal sources had been practically avoided. Of the plant materials linen was the preferred textile.

The drug-store beetle, **Stegobium paniceum (Linn.)** and the cigarette beetle, **Lasioderma serricorne** (F.) sometimes cause damage to household furnishings. These insects look very much alike and are among the more important of the household pests. They feed on a wide variety of products of both plant and animal origin. They may attack upholstered furnishings and similar materials. Feeding is usually confined to the vegetable material used in the manufacture of such products. Flint and McCauley (1939) reported the cigarette beetle as being particularly fond of silk.

Spider beetles are generally not considered as destructive pests of household furnishings. They do attack such products, and feed freely on wool and furs and may cause serious damage.

Control of Fabric Pests—The subject that deals with the control of fabric insects is so extensive that no attempt will be made to thoroughly cover it. Some of the important points that are involved in obtaining satisfactory control will be touched on. It has been pointed out that many of our most important fabric pests including clothes moths and carpet beetles find many natural sources such as rodent and bird-nests very well suited for their development. Therefore in carrying out a control program every effort should be made to eliminate these natural foci of infestation.

Adhering to good sanitary measures is also highly recommended. General cleaning, the destruction of all waste and accumulations of plant and animal products should be encouraged. The frequent use of vacuum cleaners and sunning and beating of materials subject to infestation is desirable. Because most of the fabric insects prefer to develop in secluded and unmolested locations, furniture and rugs should be moved about where such a practice is possible. The type of construction is a very important consideration because control is simplified where there are tight-fitting floors and few other places where materials subject to infestation can collect or afford hiding places for insects. Further, tight construction aids in the exclusion of pests, and insures satisfactory results if fumigation is ever necessary. Where the value of goods is sufficiently high, cold storage can be utilized for protection. Moth-proofing, or at least treating products with insecticidal material to make them resistant to fabric pests is a control measure that offers much relief. There are a number of promising products available on the market for this purpose or



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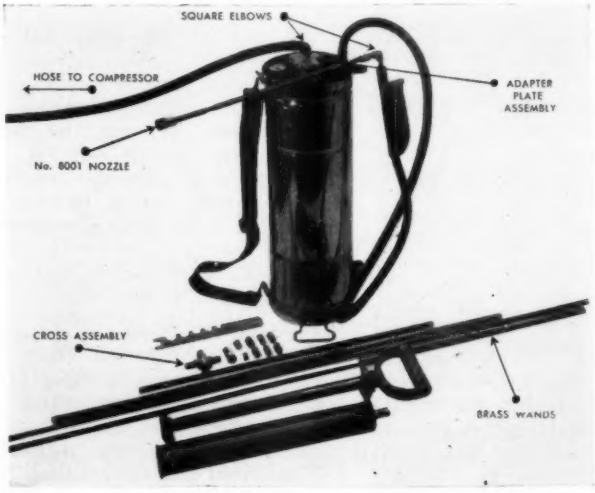

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where there is no danger of injuring the material to be protected, it can be treated with the time proven sodium fluosilicate solution. Much good can be accomplished through the addition of chemicals to the dye bath which will impart moth resistant qualities to the material at time of manufacture. Under certain conditions it may be necessary to resort to fumigation. However, unless some of the other methods mentioned are used in conjunction with fumigation, satisfactory results are not likely to result. Grade "AA" fly sprays can be used as a supplemental measure. DDT (dichloro-diphenyl-trichloroethane) has been found to be effective against many fabric pests and its intelligent use will greatly help to reduce the damage caused by such insects as clothes moths, silverfish, spider beetles, drug-store and cigarette beetles. Against some species of carpet beetles at least it does not appear to be overly effective. DDD (dichloro-diphenyl-dichloroethane) has shown promise against some of these pests. The chlorinated hydrocarbon **Velsicol 1068** has shown some promise and the chlorinated bicyclic terpene 3956 appears to be very effective against a number of household pests including carpet beetles. However, these new materials need to be further investigated before they can be fully evaluated, and just what part they are to play in the pest control program still remains to be determined. Poison baits have been used against such insects as silverfish, but because of the very effective control obtained with DDT it is very possible that their use will rapidly decline. Dryness discourages insect infestation and this is particularly true where insects like silverfish are involved.

Pests of Stored Products

The number of stored product pests is very large. Each year they cause damage that runs into the hundreds of millions of dollars. Many of the pests that cause the greatest amount of damage are world-wide in distribution. Most of these stored product pests are small and are well adapted to living in the stores of man. There are many natural foci of infestation and these along with those that occur in the stores of man, furnish a constant threat to uninfested products. Man must be constantly on the alert if he is to protect the products of his labors.

Stored product insects feed on an extremely wide assortment of foods. Some are restricted to living in seeds, others feed primarily upon animal products,, while others feed upon a wide assortment of food that include spices, animal products, drugs and cereals. With some dried fruits, nuts and cereals furnish the principal foods.

Every home is subject to invasion by these insects. In such places they are likely to cause more annoyance than damage as measured in dollars and cents. However, with some of the more general feeders, such as the cigarette bettle, serious damage may result due to upholstered furniture and similar objects becoming infested. Generally speaking, serious losses due to stored product pests occur in packing and processing plants, warehouses, elevators and other storage facilities.

Stored product pests are of several kinds and can be placed into groups according to their habits. In the strictest sense they can be limited to those insects that complete their entire development, or at least their entire larval development in the food or product which they infest. This classification eliminates such insects as ants, cockroaches, silverfish and crickets. These latter usually live elsewhere and only come to foods to feed. Therefore it would appear that they should be considered as contaminators of foodstuffs in contrast to those insects that are intimately associated with the products in which they live. A knowledge of stored product insects as to their name and habits is essential if infestations by them are to be most successfully and economically controlled. Time or space does not permit a full discussion of this subject. These insects can be roughly divided into the following groups according to their feeding habits:

1 Pests of Seeds:—To this group belong such insects as the pea and bean weevils, rice weevil and the granary weevil. Most of the insects that belong to this group are restricted to living in seeds although the rice and granary weevils can breed in cereals such as spaghetti and macaroni. Insects of this group are responsible for a great amount of damage each year. In homes they are among the easiest insects to control. Because of their restricted food habits, all that needs be done is to find and destroy the product in which they are breeding.

II Pests of Cereal Products:—In this group we find a great many insects. Many of these feed on a wide assortment of foods other than cereal products. Among the more important beetles that belong here are the confused flour beetle, **Tribolium confusum Duv.**; red flour beetle, **T. castaneum** (Hbst.); the sawtoothed grain beetle, **Oryzaephilus surinamensis** (Linn.); the flat grain beetle, **Laemophloeus pusillus** (Schon.) and the drug-store beetle, **Stegobium paniceum** (Linn.). This latter insect prefers the coarser cereal products and in California is one of the insects that is most frequently encountered in homes. The Indian meal moth, **Plodia interpuntella** Hbn. and the Mediterranean flour moth, **Ephestia Kuhniella** Zell. are the two most important moths. The larvae of the latter spin large quantities of silk. The cereal mite,**Tyroglyphus americanus** Banks, sometimes becomes very annoying.

III Pests of Dried Fruits and Nuts:—The list of insects that belong to this group is very large. Probably the Indian meal moth is the most important moth, while the sawtoothed beetle is among the more important beetles. Other important moths are the almond moth, **Ephestia cautella** Walk. and the Mediterranean flour moth, **E. kuhniella** Zell.

IV Pests of Drugs, Spices and Tobacco:—Many insects that are general feeders belong to this group The most important are the cigarette beetle,**Lasioderma serricorne** (F.) and the drug-store beetle, **Stegobium paniceum** (L.).

V Pests of Processed Animal Products:—There are a large number of insects that attack processed animal products. Many of these are general feeders. Among the more important are carpet beetles, clothes moths, several species of spider beetles, the larder beetle, **Dermestes lardarius** L.; hide beetle, **Dermestes vulpinus** F.; drug-store beetle, cigarette beetle and the cheese skipper, **Piophila casei** L.

Control of Pests of Stored Products:—Many of the control measures are the same as those given for fabric insects. In homes infestations can frequently be taken care of by locating and treating or destroying the infested material. Sanitation is all important, and storage areas should be constructed so that they are tight and can be easily cleaned. Tightness is also essential because it is frequently necessary to fumigate products that are infested. Moisture favors the development of stored product pests and for this reason, materials and storage areas should be kept as dry as possible. Where feasible, materials should be stored where it is cool because temperatures of 70 to 90° F are extremely favorable for the development of most of the insects associated with stored products. Products should be used in an orderly manner so that the first

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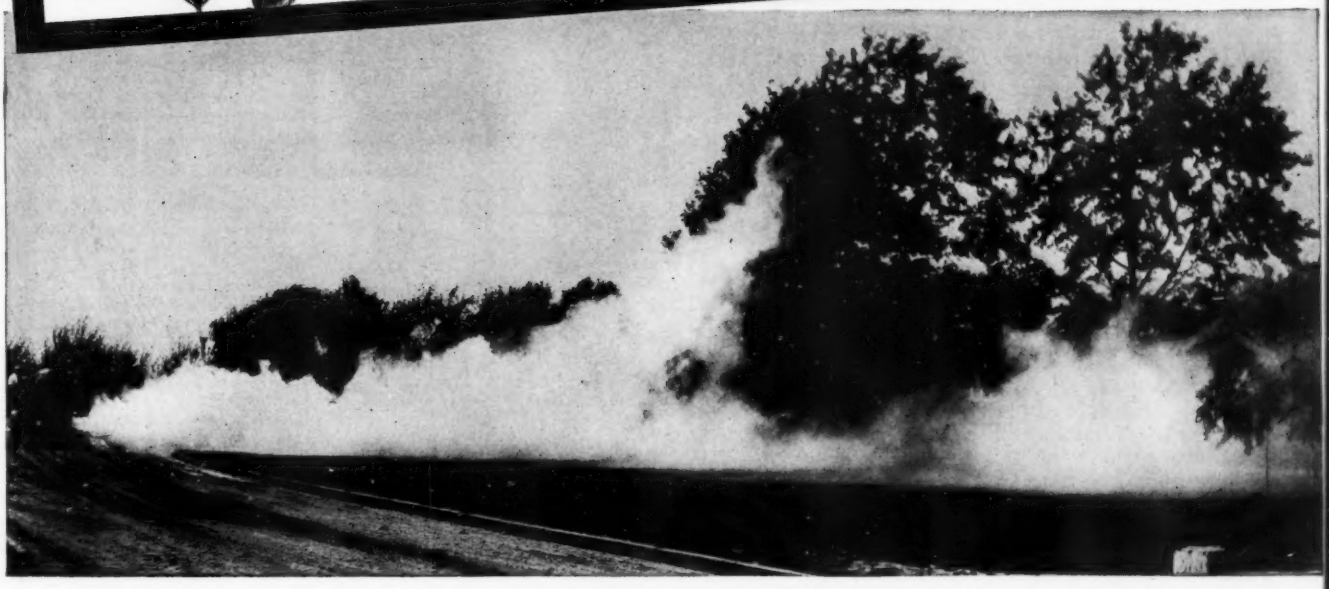

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in storage is the first used. New and old lots should never be mixed and noninfested products should be kept away from those that are infested. Second-hand containers should be avoided unless they have been treated to render them free of insects. DDT and other insecticides such as DDD that have a residual action show much promise in controlling stored product pests. For the present time these materials should be used with considerable caution. With DDT residual sprays, care should be exercised to avoid wetting portions of equipment that come in contact with food, utensils and foodstuffs. It probably should not be used to spray out bins used for bulk storage, although it can safely be used to spray out areas used for the storage of packaged goods. Sprays containing as high as 5 per cent DDT have been recommended for residual treatment, although in our investigations we have obtained excellent control with a ½ per cent water suspension spray where it has been evenly and thoroughly applied.

Dooryard Pests

There are many insects and related organisms that live out of doors, but sometimes become annoying household pests. Many of these animals accidently get into homes while seeking a place to estivate or to hibernate. Others are carried in fire wood or work their way in while seeking shelter. Very few of these organisms cause any actual damage.

There are a number of true bugs that cause annoyance. Among these are several species of corizid grass bugs. In late spring and early summer they sometimes come into homes when the plants on which they breed begin to dry up. The box elder bug which breeds in large numbers on box elder, frequently invades residences during the winter. This pest can best be controlled by destroying the hibernating individuals with a satisfactory contact spray.

Among the beetles that commonly enter homes are the darkling ground beetles and predaceous ground beetles. One of the most important and troublesome beetles is the tule beetle, **Playtnus maculicollis** (Dej.). It breeds in marshland and often appears in large swarms at dusk following rains, in the fall of the year. It freely enters homes and is very annoying because of the very offensive odor which it emits. Frequently wood boring beetles will emerge from infested fire wood that has been brought into homes. These beetles may congregate on windows in large numbers much to the alarm of the housewife. This worry is needless since the vast majority of these insects do no harm. At times a knowledge of insects and their habits may be very helpful in locating the scource of insects coming into homes. Where homes are located under oak trees, the weevil larvae which develops within the acorns may find their way into houses. When mature the weevil larvae leave the acorns and drop to the ground to pupate. If instead they fall to the roof of a dwelling there is a possibility that they might crawl into the house. This sometimes happens and on one occasion large numbers were observed crawling about the living-room, dining room and screen porch of a home. Birds such as woodpeckers and jays may also cache infested acorns about a home, and the grubs that emerge from them sometimes get inside houses and cause much concern.

The European earwig, **Forficula auricularia** L., is an insect that frequently enters houses, getting into pantries, cupboards as well as all parts of the home. It is best controlled out of doors with a bran-sodium fluosilicate, fish oil bait, which is best applied during the late spring through early summer. It is possible that DDT might be very effective in controlling this very annoying pest.

Crickets frequently enter homes and cause much annoyance. They can be destructive and there is the danger of them feeding on fabrics particularly if they have become soiled. DDT as well as some of the other new insecticides such as 666 have been found to be very effective in killing crickets.

Under certain favorable conditions millipedes enter homes. They naturally occur and are found most abundant in damp moist locations which are rich in decaying organic matter. Sowbugs and pillbugs also occur in similar conditions, and sometimes find their way into homes. DDT has been found to be very effective in controlling all of these pests.

Control of Dooryard Pests:—Every effort possible should be made to seal off all openings and crevices through which these pests find entry. Screens should be made tight and the cracks between the door jamb and the door should be sealed. Thorough cleaning up of all rubbish and other accumulations about the foundation of a structure is helpful. Proper pruning and training of vines and shrubs that grow over buildings is also of value. The outside of buildings should be kept dry, and shrubbery should not be allowed to grow over windows or other openings. A number of the new insecticides have shown a great deal of promise in controlling many of these pests, but most of the treatments have only recently been developed, and have not had the opportunity to withstand the test of time.

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Chemists Alter Basis of Wool to Resist Moths

Alteration of the basic chemical structure of wool to produce enhanced resistance to attack by moths and chemical agents was claimed at Atlantic City, N. J., on April 18, before the American Chemical Society by Dr. Milton Harris and Dr. Arnold Sookne of the Harris Research laboratories, Washington, D. C.

The process, it was asserted, may have far-reaching effects on the wool industry, since many commercial wool processes, such as scouring, stripping, bleaching and vat dyeing, involve chemicals that have more or less deleterious effects.

It was pointed out that the particularly desirable qualities of wool are its resistance to wrinkling and its ability to entrap air, which increases its value for warm clothing and blankets.

Unfortunately, it was explained, these cross-links, so important for the outstanding properties of wool textiles, also are wool's Achilles heel because they are readily destroyed by many chemicals normally used in wool and are also involved in the sensitivity of wool to attack by moths and carpet beetles.

—*N. Y. Herald Tribune*

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PEST CONTROL *and* PUBLIC HEALTH

By J. W. BASS, M.D., Director of Public Health, Dallas, Texas

Editor's Note: The following paper was presented by Dr. Bass, at the Annual State Meeting of the Texas Pest Control Association in December, 1946.

THE contribution of Pest Control Operators to Public Health has not been sufficiently emphasized in the past. For a number of years they have done a lot of work that if they had not done, public clamor would have forced health departments to expenditure of public health funds; the sum total of which would have been very unproductive from the public health standpoint. Health Departments should never engage in pest control activities except for the protection of the public health. Health Officers should utilize the services of Pest Control Operators, where possible, in the control of animals or insects where the public health is involved. In this way, the good health officer is able to conserve his limited health funds and make the most of public health funds and make the most efficient use of the appropriations available.

Problems will arise where the successful control or eradication of pests will require collective effort to achieve the desired results. In many cases this collective effort can be exercised through the passage of laws or ordinances. In some cases, it will be necessary for the Government to supplement the work of commercial exterminators. There has never been any conflict between the efficient public health administrator and the competent pest control operator. It is not usually difficult to determine the responsibilities of the Health Department or Governmental Agencies and individuals in the control of any animal or insect. The Bureau of Entomology and the Department of Agriculture and the Bureau of Biological Surveys have never, in any way, come into conflict with commercial pest control operators. Those Governmental Agencies have conducted research upon the best method of exterminating or controlling various animals and insects and have given the information without charge to commercial exterminators. These Agencies have provided some extremely valuable control work which could not have been provided by individuals upon a commercial basis. Good example of the excellent work of the Bureau of Biological Surveys is the control of predatory animals, gophers, crows, etc.

The field of commercial pest control has increased considerably within the last few years. Until recently exterminators obtained most of their income from rat extermination. In this Country, the rat was the most numerous of pests and the most destructive. The annual damage to property and the cost of feeding rats made it profitable to pay considerable sums of money for their control. The enormous destruction and damage of rats made it possible for business men to pay fees sufficiently attractive to enable exterminators to obtain a living through rat extermination. Rodent control still constitutes an important part of the business of Pest Control Operators. The relationship of Pest Control Operators to rat control is very similar to the relationship of the Urologist to the treatment of gonorrhea. The Urologist, although he is compelled to treat gonorrhea, is insulted if he is referred to as a "clap doctor". The modern Pest Control Operator has the same aversion to being called a "rat catcher" or "rat exterminator". It requires years for a Urologist to earn a livelihood without treating venereal disease. Likewise, it would be most difficult for a Pest Control Operator to get along without doing some rat extermination.

For many years, rats were not considered a public health problem nor rat control a public responsibility. The rat, as a carrier of disease, until recently was thought of only in connection with Bubonic Plague, a disease which was introduced into our port cities only a few times during a century. Health Departments of port cities in which Bubonic Plague was introduced took immediate steps to control the disease by the control of rats. The first cities in the United States to pass rat proofing ordinances were coast cities where Bubonic Plague appeared. It was only when rats were found to disseminate the salmonella infection or food poisoning that Health Departments in the inland cities began to consider rat control a public health problem. When rats were found to disseminate these food infections, Health Departments throughout the country began to insist upon rodent control in all food establishments. The Dallas Health Department, for many years has graded food establishments down upon the presence of rats and had even prosecuted proprietors when it became evident that they were not making an honest effort to control rats. Proprietors often insisted upon the keeping of a cat in the establishment. For a number of years animals have been excluded from food establishments in this country but it required considerable education and perseverance to convince many proprietors that a cat was not an efficient exterminator and would pay very little attention to rats in the establishment if well fed as they invariably were in meat markets.

It was soon learned that rodent control had to be continuous and required a person with special knowledge and equipment. It was impractical for an individual to devote sufficient time to study rodent control away from his regular business or to purchase the necessary equipment for use in his place of business alone. If rodent control is to be effective, Health Departments and Exterminators must continue to emphasize the necessity of continuous effort for maintenance. The Health Department of the City of Dallas in its rat proofing program has never come in conflict with Pest Control Operators and there has been very little complaint from the public which has purchased the rat proofing service because the necessity of maintenance after the rat proofing had been continuously emphasized. Businessmen, as a whole, have been pleased with results and after the necessity for maintenance had been explained to them, most have preferred to employ an Exterminator for maintenance.

The Health Departments of Inland Cities in the United States did not enter the rat control field as a public service until the appearance of endemic typhus had increased in prevalence to make certain phases of the work a public responsibility. The Typhus Control Division of the Health Department of Dallas, under which the public rodent control activities are administered, is not concerned altogether with the rat proofing of buildings or the extermination of rats. A lot of activites carried on by this Department are of the type that could not be done by private ex-

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terminators or if it could be done, the people could not pay for it. Surveys are being conducted continually throughout the City; rats are trapped, blood tested and combed to determine the endemic prevalence of typhus in rats and the prevalence of ectoparasites. The Health Department does not do exterminations as a public service but as a public health responsibility. It's exterminations are limited to those areas where typhus has appeared or where a high endemic index is found to exist in rats. The Health Department with its limited appropriations is concerned only with the public health control of rats. We have never considered the control of pest mosquitoes a public health responsibility. As far as possible we have exercised selective control and devoted most of our efforts to those areas in which disease-carrying mosquitoes have been found. We do not contemplate a bed bug control program until the bed bug becomes a public health problem.

The field of employment of Pest Control Operators has been increasing and the amount of education and training necessary for a successful operator has increased many fold. It is now necessary for a successful operator to be a mammalogist, entomologist and toxicologist. It looks like in the near future he may have to be a building engineer and somewhat of an architect.

The equipment necessary to a successful operation is becoming more elaborate and more expensive. Due to our improved standard of living, the public is demanding a much higher standard of perfection; people are no longer contented to live in perfect harmony with many of the insects and mammals our parents considered necessary evils.

There has been a complete change in the public conception of the terms of control and eradication. People now expect control to mean what people a few years ago would have considered complete eradication. The type of control exercised by the hobo in the control of lice, where a wool rag was tied around the body during the night to trap the lice and the rag burned in a camp fire the next morning is no longer acceptable, although this procedure would succeed in reducing the lice population. When people ask for cockroach or bed bug extermination they mean extermination and control and not a temporary reduction in the roach or bed beg population. This difference in the concept of what the people expect has resulted in a much more efficient application of pest control measures. Those who stayed in business have had to keep abreast of the most modern methods and have had to provide the services expected.

Health Departments should do everything within their power to educate the public and businessmen to use Pest Control Operators when practical. It is essential that Health Departments be relieved as far as possible from unnecessary expense which can be performed just as effectively by individuals. We are doing all we can do to encourage large food concerns to provide, as much as possible, their own food inspections. Some cities have made considerable progress and have been able to bring about a material reduction in the cost of public health inspection services. The Health Department in a city well supplied with efficient Pest Control Operators and an educated public may not be called upon to meet public health problems which may arise in a less fortunate community. Health Officers should utilize the services of the Exterminators by assisting in the education of the public to use them instead of calling upon the Health Department or attempting to do the work themselves. The public should be continuously reminded of the dangers of trying to use poison in their homes without sufficient knowledge of the agent used or the necessary equipment for successful application. Several children and many domestic animals are poisoned annually through the ignorant and indiscriminate use of poisons. From two to four deaths occur every year in Dallas from accidental poisoning while in the last ten years there have been only 10 deaths from endemic typhus. If a rat extermination program is not scientifically conducted, it is entirely possible that the cure may be more fatal than the disease. It is also important that Health Departments inaugurating rodent control programs have a well ordered plan and a definite objective. The Health Officer must have sufficient knowledge to know when a sensible and practical objective has been reached. Many who have inaugurated rat control programs have not been nearly so thorough as General Von Moltke. When asked by the Kaiser if he had ever developed a plan for the invasion of England, his answer was "Yes, over 100 plans for invading the country, but not a single plan for sucessfully getting out."

The future of commercial pest control depends to a large extent upon the type of services rendered. The desired standard of service must be maintained for the public. It may be that this can best be assured by developing a code of ethics within the organization. It may be that help from local or state governments may be required to protect the public against some unscrupulous or incompetent operators. However, with the right kind of organization the legitimate operators should be able to rather effectively control or eliminate shysters very much as the medical profession has eliminated the unethical practitioners of medicine. The unethical practitioner of medicine and those who sell ineffective remedies and make false claims have been practically controlled altogether by public education and by the physicians themselves. Although we have numerous laws to control medical practice most of the progress that has been made in the control of unethical medicine has been achieved without prosecution. It seems that all that may be necessary is to establish certain standards of experience and a method of certification which would inform the public.

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"Trends in Sanitation and How They May Affect the PCO"

By A. A. ROBERTSON

An address given before a meeting of the New England Pest Control Association at the Hotel Lenox, Boston, Tuesday, January 14, 1947.

Mr. Robertson is Chief Sanitary Inspector of the Massachusetts Department of Public Health. —Editor's Note.

ONE of the good results of the war has been the increased interest in public health, including environmental sanitation. Men and women have returned from the armed services with a better conception of the functions of public health departments. Many of these men and women are demanding that their health departments expand their activities and render more efficient service.

The publicity given to sanitation as practiced in the army and navy had an effect on the general public. For example, long before DDT became available for civilian use, people were calling their local health departments, requesting that DDT be made available to them for fly and mosquito control.

Since the war, popular magazines have featured stories about health conditions or the lack of them. People are more public health minded. In many instances, favorable public opinion has aided local health officers in securing more adequate appropriations.

Many local departments have increased the number of persons on their staffs. Some smaller departments are employing sanitarians on a full-time rather than a part-time basis. Several instances have occurred during the past year in Massachusetts, where two or more towns have combined to secure the services of a full-time sanitarian.

There are indications that men being engaged as sanitarians are better qualified that formerly. Too often in the past, a person has been appointed as a sanitarian in the health department because he has been a friend of a politician. This will probably always happen, but, I believe, the tendency is away from this practice.

The sanitarians in local health departments in Massachusetts are showing an increased interest in their jobs. During the past six months, at the request of local boards of health, restaurant sanitation surveys were conducted by the Massachusetts Department of Public Health in 26 communities, which is more than double the number for any previous six-month period. Most of these surveys were followed up with courses of instruction for the proprietors and employees of eating and drinking establishments.

The district sanitary officers in the Bureau of Sanitation go into cities and towns only when requested to do so by the local personnel. Increased interest in this work is evidenced by the fact that requests for advice or assistance have been received from 227 cities and towns during the past six months, the same number as requested assistance during the twelve-month period just preceding. Not only are more communities requesting assistance, but the requests from the various communities are more frequent.

There are many other examples of this trend for the demand of improved services on the part of local health departments. How will this trend affect the PCO? Perhaps this question can be best answered by mentioning some of the expanded services which may be given by local health departments during the next few years.

Up to the present time, health officials in Massachusetts have not placed very much emphasis on rodent control. The tendency has been to evade the issue on the basis that rats and mice are more of a nuisance than a public health menace. Even in food establishments where the presence of rodents may result in the contamination of food, inspectors have been extremely lenient in enforcing public health measures when rodents or evidence of rodents have been found.

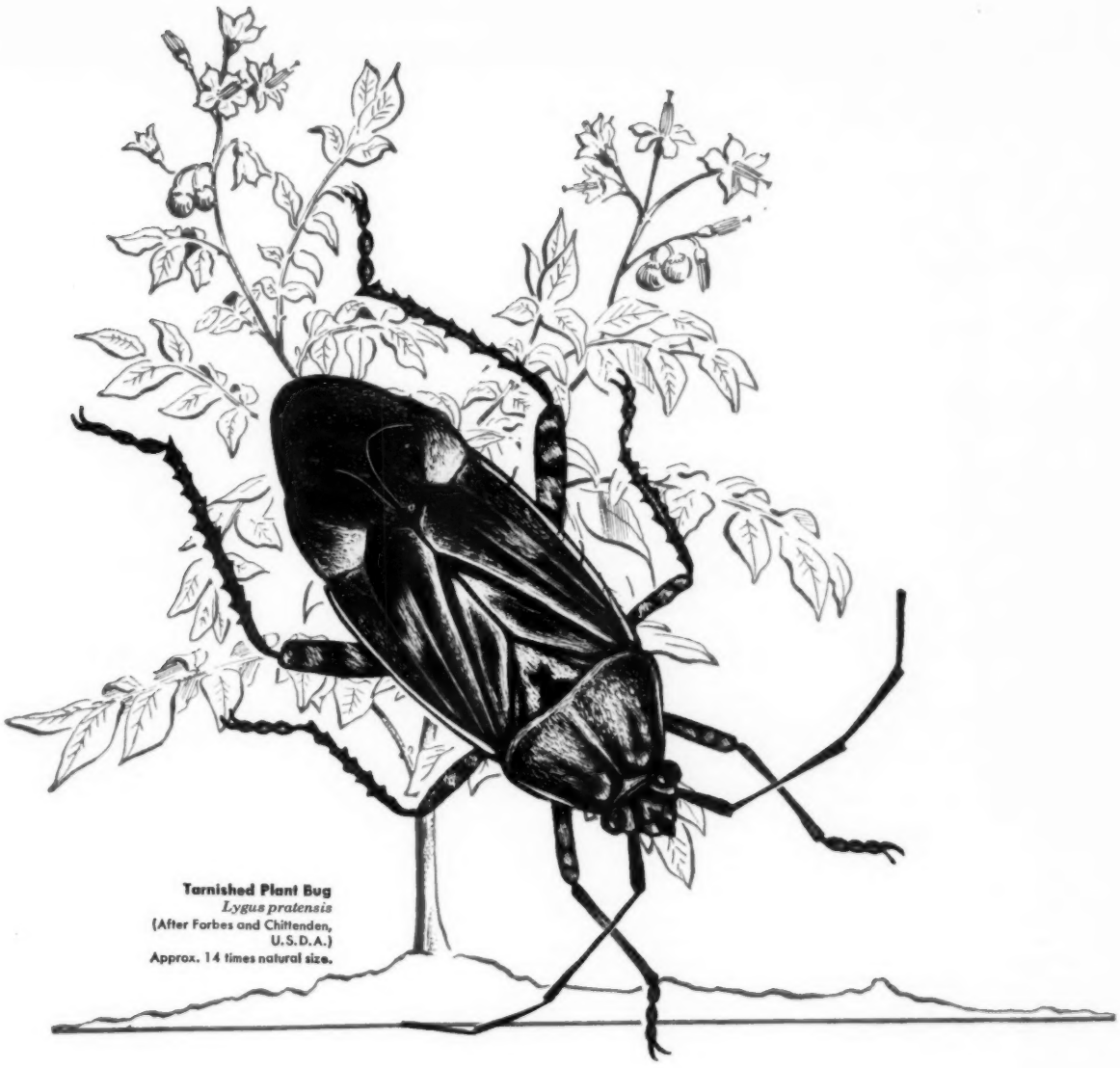
Restaurant sanitation surveys conducted in more than 60 Massachusetts cities and towns have indicated that rodents are present in about 10 per cent of the eating and drinking establishments. In another 15 to 20 per cent, conditions exist that are favorable to the breeding or harborages of these pests. Inspectors in the future are going to be much stricter in dealing with this problem of rodent control in food establishments.

In all probability, many communities in Massachusetts during the next few years will undertake rodent control programs. These programs will be designed primarily to eliminate conditions conducive to the breeding and harborage of rodents. This will include the control of municipal and other dumps. Water disposal by means of incineration and sanitary fill will replace the present insanitary method of disposal by dumping.

The PCO should be ready to participate in this rodent control program, as it is developed for commercial establishments, and the community as a whole. The program will require properly trained and experienced personnel. Many of the smaller communities will not be able to engage the service of a full-time qualified personnel. The PCO who is alert and looking to the future, should have an opportunity to take over the entire program in smaller communities. In some other communities he may be called upon to act in a supervisory capacity.

Perhaps some of the PCO's in this association have done some mosquito control work, but I have yet to hear of the activities of anyone in particular. The mosquitoes prevalent in New England do not present as much of a public health problem as those found in adjacent areas. Mosquito-borne diseases are not endemic in New England, although there are some records on file of sporadic cases. Though a considerable number of men have returned from the service with malaria and other mosquito-borne diseases, the epidemiologists in our department are not of the opinion that their presence is a cause for alarm.

Personal comfort rather than disease prevention is the objective of the mosquito control program in Massachusetts. Nevertheless, upon the insistence of the public, cities and towns are undertaking mosquito control programs. In many communities, the program to date has been more or less hit or miss - mostly miss - and results have not been very effec-



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tive, and certainly have been uneconomical. However, some communities have put on very good programs. Many of these programs have been directed by the State Reclamation Board. As an example, we might cite the East Middlesex Mosquito Control Project where Arlington, Belmont, Cambridge, Watertown, Lexington, and Waltham pooled their rescources and are at present carrying on a reasonably effective program.

Several boards of health have recently been contacted by a qualified pest control operator with a proposition to take over their mosquito control program. Perhaps the PCO of the future will also have a mosquito control expert.

Much interest is being manifested, particularly by social and welfare agencies, in the improvement of substandard housing conditions. Health departments throughout the state have not yet taken too much interest in this matter, but it is to be expected that they will, because of the pressure that will brought to bear on them.

One group in Greater Boston is drawing up a set of sanitary regulations, and communities in this area will be asked to adopt them. Among the items of sanitation stressed in these regulations are pest control. Among the control measures advocated are fly control with screens to be provided by the owner. Where the rat problem is appreciable, the proposed code requires that all openings through foundations and floors be closed effectively with metal sheeting, concrete, or other suitable ratproofing material, and that exterior doors be made self-closing and to open outward. Roach control at the expense of the owner of the premises where they are found is also required. PCO's will have the opportunity to do most of the work necessary to exterminate the vermin mentioned. Even though many regulations in the suggested code may not be adopted by local boards of health, the local inspectors under authority of present laws should stress these items. They will have to do so because of the insistence of the public. Experience has indicated that when the property owners undertake their own exterminating work, rather unsatisfactory jobs result. There isn't much doubt that PCO's will be called upon to do much more vermin control work in dwelling houses. Tenants are going to complain to boards of health who in turn will be issuing orders to owners. The owners will have to call upon the PCO.

There will be an increased interest in pest control on the part of owners of food establishments. Inspectors are becoming more conscious of the possibility of food being contaminated by rats, flies, roaches, and other pests. Here, also, I believe that the program should be one of control and not merely temporary eradication. The PCO of the future will, I believe, stress the elimination of conditions tending to attract or to favor the growth and reproduction of rats, roaches, and other pests. The work of the PCO, therefore, will be of a preventive nature. For example, the use of DDT in food or milk plants should not be the only fly control measure used. It should merely supplement other measures. The elimination of breeding places is still an important measure for fly control.

The importance of more cooperation between the PCO and the sanitarian cannot be stressed too strongly. Many PCO's have never met sanitary officers in most of the towns in which they work. Perhaps the sanitary officer has never heard of the PCO. You as individuals and as a group can be of much assistance to the local board of health sanitarians in your district. Make it your business to get acquainted with him and the health officer.

Perhaps from time to time you might send him material on new insecticides, rodenticides, and new methods. Occasionally, you might invite them to your meetings. Such a procedure would lead to a better understanding of the problems involved, and bring about closer cooperation between the private and official agencies carrying on these programs for the benefit of the whole community. The sanitarian would then know that the PCO's are not merely rat catchers and fumigators.

Finally, your program should stress education. In a final analysis, your work is one of sanitation. To be effective, all sanitary inspections must be an educational experience for the property owner or restaurant manager and employees. The elimination of rodents, roaches, and other pests in any establishment requires the cooperative efforts of all these persons. To get this cooperation, you must demonstrate to the workers what is being done, and why this is important from a public health standpoint.

The sanitation program has been more or less in the background during the past twenty years, although it has played an important part in the prevention and control of disease. Today, however, due to increased activities and revolutionary discoveries made during the war, environmental sanitation is in the limelight. It is our responsibility as public officials and private operators to make effective use of these new developments, and to work together for the improvement of sanitary conditions in our own communities.

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Q. *Does Methyl Bromide have an odor?*

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Q. *What dosage and exposure period is recommended for controlling insects in box-car loads of bagged or packaged foodstuffs?*

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Uses of Various DDT Formulations for the Control of Insects Affecting Animals

United States Department of Agriculture
Agricultural Research Administration
Bureau of Entomology and Plant Quarantine

Division of Insects Affecting Man and Animals

FIVE types of DDT formulations are employed in the control of animal pests—dusts, wettable powders, emulsions, oil solutions, and aerosols. 1* In weighing the relative merits of each of these types and the place each may have in this field, it is first of all necessary to consider such important factors as effectiveness, toxicity to animals, cost of treatment, and ease of application. Such factors must be considered in relation to the several kinds of parasites to be controlled and the different hosts on which the treatment is applied. Furthermore, the conditions under which these materials will be employed vary greatly in different sections of the country and at different seasons of the year. To complicate matters even more the five types of preparations differ in composition, physical properties, and type of equipment used for their application.

In view of the above, it is understandable that confusion and uncertainty exist in the minds of research workers, extension personnel, manufacturers, distributors, and consumers regarding the type of DDT material that should be employed for the control of various animal parasites. This paper summarizes the observations and experiences of the Bureau of Entomology and Plant Quarantine with the different types of formulations. It is recognized, however, that the place each of these types has in the field of insect control cannot be clearly defined at present, and that further research and practical experience may lead to information that will require modification of the opinion and suggestions that are offered.

Detailed directions for use are not given. The purpose of the paper is to explain the characteristics of the various types of DDT formulations now being marketed, and to discuss briefly some of the advantages and disadvantages of each.

Caution—The toxicity of DDT is too low for it to be regarded as an acute or caustic poison, and a 10-per cent DDT dust has been used extensively in the control of body lice on man without any ill effect. Nevertheless, it should be handled as a poison. Food and utensils should not be contaminated by it, and the hands should be washed thoroughly after it has been handled. Oil solutions can be absorbed through the skin; therefore extended exposure of the skin to such solutions should be avoided, as should also unnecessary exposure to aerosols. When DDT insecticides are applied in barns and similar structures, care should be taken to avoid deposits on food that is to be fed to animals, especially those producing milk.

*1. Technical DDT having a setting point 89°C. is generally used for all formulations, except for certain types of aerosol preparations. For liquefied-gas aerosols a product having a melting point of not less than 103°C. is used.

Dusts

Dusts containing DDT may be formulated with various kinds of materials. The type of material, the size of the particles, and other physical characteristics have a bearing on the performance and possibly on the effectiveness of the product. Most of the experimental work has been done with mixtures containing pyrophyllite or nonfibrous talc. Light, fluffy materials, or those which are liable to pack in the duster, may not perform satisfactorily or be fully effective. DDT dusts are employed less extensively than sprays against insects affecting animals. The dusts are recommended, however, in concentrations up to 10 per cent for use on animals (except cats) infested with certain lice and fleas. Dusts are considered especially desirable for louse control on cattle and hogs in cold climates, where dips or sprays might prove harmful to the animals and where satisfactory control can be obtained even though two treatments may be required. However, with the equipment that is available at present, dusts are generally less effective than sprays, because it is more difficult to obtain thorough and equal distributions of the insecticide on the host with the dust. Where dusts can be employed effectively their use is encouraged, because of ease of application and safety to animals. However, excessive inhalation of dusts by the operators and animals being treated should be avoided as much as possible.

Wettable Powders

Wettable powders consist of finely ground DDT plus an inert carrier, or diluent, such as pyrophyllite or talc. to which a wetting agent has been added. When mixed with water the preparation is used as a spray which contains the powder suspended in the water. The properties and performance of such a spray will depend on the characteristics of the diluent, the method of mixing the diluent with the DDT, the kind of wetting agent, and the type of water used. The ingredients may differ in various commercial products; therefore, it may be desirable to observe and appraise the settling and wetting properties of a material before using it extensively.

Certain types of products settle out of suspension more rapidly than others and may clog spray nozzles. Pyrophyllite, nonfibrous talc, and certain types of clays have been found best suited as the base for wettable powders. The various types of powders do not behave the same in all kinds of water. The wetting agent plays an important part in keeping the powder in suspension and its performance may be affected by the characteristics of the diluent or by the type of water used, especially if the water is extremely hard or highly alkaline.

To insure equal distribution and uniform dosage of the insecticide, it is necessary to see that the solid material does not settle out while the spray is being applied. This requires agitation in the spray tank or dipping vat. When the suspended material has a tendency to cake, reagitation is of particular importance in dips.

Notwithstanding the known and possible adverse characteristics of some of the wettable powder preparations, there are excellent products of this kind on the market. As will be brought out later, a wettable powder is considered the preferred type of

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DDT preparations for use on a number of animals.

DDT emulsion concentrates contain DDT, an organic solvent, and a water-miscible emulsifier. The concentrate is diluted with water to obtain the desired strength of DDT for application as a residual-type surface spray or for use on animals as a spray or dip. In emulsions the DDT is in the form of a dispersed solution, as contrasted with wettable-powder sprays, in which the particles are suspended in water. Here, as in the case of wettable powders, the diluted spray or dip is largely composed of water.

Various solvents and emulsifying agents are employed in the preparation of DDT emulsions. Some solvents may injure washers and similar fittings used in sprays. Certain solvents may also constitute a fire hazard. Little is known regarding the toxicity to animals of many of the solvents and emulsifying agents, when they are employed alone or in combination with each other or with DDT. Many solvents that may be used in making emulsions are of such a nature that they should not be applied directly to animals. In general, the use of high-boiling aromatic solvents should be avoided. Only a few specific materials have been tested sufficiently to demonstrate that they can be used safely on animals, and then directions for their use must be carefully observed.

Furthermore, the stability of the emulsion may vary. Certain materials that emulsify readily with ordinary water may not emulsify with hard or highly alkaline waters. Emulsions of this kind may "break" quickly in such waters, so that the emulsion concentrate will either rise to the surface or sink to the bottom, depending on its specific gravity. When unstable emulsions are applied to animals as sprays, certain of the animals may be subjected to highly concentrated solutions, others to correspondingly low concentrations. Animals treated with an emulsion in which the concentrate has risen to the surface upon breaking may be exposed to high concentrations, especially if they are dipped in it. Such hazards are largely avoided in dips when the oil phase settles to the bottom. The solvents used in lighter-than-water concentrates may evaporate, and thus a large portion of the DDT precipitates and sinks to the bottom of the vat. The heavier-than-water and stable types of emulsions are therefore also advantageous from this standpoint. However, the heavier-than-water types might be more hazardous when employed as sprays, since the liquid is fed from near the bottom of the spray tank, except when atomizing types of sprayers are used.

The total amount of spray applied to an animal should be considered. Too much emphasis has been given to concentrations of DDT in the spray without due consideration to the amount of liquid and the actual amount of DDT applied.

This very brief review of the characteristics of DDT emulsions as a class should show the user, retailer, and manufacturer that difficulties may be encountered in connection with their unconsidered and wide-scale use on animals. Cases of injury to livestock through the use of emulsions attributable to one or more of the factors mentioned have been reported. On the other hand, no reports of injury from the use of DDT wettable powders have come to our attention. For this reason the Bureau of Entomology and Plant Quarantine considers that, in the interest of safety, DDT wettable powders are in general the preferred treatment for pest control on livestock, except in cases where emulsions are distinctly more effective or otherwise distinctly advantageous for the control of the parasite.

In closely supervised large-scale tests specially prepared DDT emulsion concentrates were applied to livestock for the control of external parasites without harm to the animals. Light aromatic solvents, such as xylene or toluene, were used with Triton X-100 (an aralkyl polyether alcohol) as the emulsifier in tests on cattle, sheep and goats, and soluble pine oil was used in other tests on sheep, goats, and horses. These tests and other observations suggest that DDT emulsion concentrates containing only ingredients known to be of a low toxicity, and which form a stable emulsion when mixed with water, may be used on animals without harmful effects and may be expected to give effective control of the parasites which are susceptible to DDT.

DDT emulsions have been employed for the control of insects on animals in many localities throughout the nation during the past seasons. In experiments for the control of certain external parasites on sheep and goats, specific emulsions were found to be superior to the DDT wettable powders because of better penetration. For the control of other pests, such as the horn fly and lice on cattle, the wettable powders proved to be equal to or more effective than emulsions.

For use as sprays by the average farmer or small livestock raiser, emulsions may offer certain advantages over wettable powders. They are easily mixed and readily applied with equipment generally available, such as ordinary garden-type pressure sprayers or small hand sprayers. Emulsions may also be more suitable than a wettable powder for use in the home to control household pests. Those who require only small quantities of insecticides may prefer to have on hand one material and equipment that is suitable for treating the home as well as livestock. In view of these and other factors, and because DDT emulsions may be procured for use on animals, the following suggestions and cautions, based on present knowledge and experience, are offered:

(1) The emulsion should first be tested in the type of water that will be used for diluting the spray, to determine whether a stable emulsion will result. The oil phase should not break; it should remain as a milky suspension for about 12 to 24 hours, and when it rises to the surface or settles to the bottom of the container, a creamy layer should be formed, **not** a clear oily layer. All other factors being equal, the most desirable emulsion from this standpoint of safety is one in which the oil phase remains as a milky suspension for more than 24 hours. To decrease the possibility of improper mixing, the concentrate should tend to be miscible with water without agitation, although **every emulsion should be stirred thoroughly while it is being prepared and before each use.**

(2) Emulsions for use in a dipping vat should preferably be of a stable type or of the heavier-than-water type that can be readily reemulsified. Emulsions that have proved satisfactory for charging dipping vats have been used repeatedly for several months without recharging, as have also the wettable powders.

(3) The concentration of DDT to employ for dips will vary with the kind of pest. The following concentrations are suggested: Against horn flies on cattle, sheep ticks, and sheep and goat lice, 0.2 per cent; against cattle and hog lice and certain ticks, 0.5 per cent.

(4) Where emulsions are employed as sprays for control of horn flies, the concentration of DDT in the diluted spray should not exceed 1.5 per cent. This high concentration should be applied in small amounts, usually at a rate of about 1 pint for the average-size cow. For treatment of lice on cattle, where it is important to obtain adequate and thorough wetting of the animal, a minimum of 0.5 per cent DDT is suggested and approximately 2 quarts per animal may be required. Thorough applications are necessary to control both horn flies and lice. In sections of the country where experience has shown that satisfactory horn fly control on cattle may be obtained with lower concentration than the minimum mentioned above, a thorough treatment with 0.25 per cent DDT is suggested. However, this low concentration is not highly effective against lice, and it is usually desirable to control this insect at the same time that cattle are treated for flies. More effective control of mosquitoes and other biting insects, where they occur as livestock pests, may also be expected with higher concentrations of DDT. For the

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control of hog lice a thorough application of 0.5 to 0.75 per cent DDT emulsion is suggested.

(5) It is desirable to mix only the quantity of emulsion sprays that will be used during the day or for a particular job. If an excess has been prepared and set aside, it should be stirred thoroughly before it is used.

An emulsion for use on cattle, containing in the concentrate form 25 per cent of DDT, 65 per cent of xylene, and 10 per cent of Triton X-100, has been discussed in E series publication 675 (Use of DDT in Control of Flies on Cattle and Around Farm Buildings). Present information indicates that the percentage of DDT in the diluted spray suggested in that publication (2.5 to 5 per cent) is unnecessarily high, and the lower percentages discussed in this paper (0.25 to 1.5 per cent) should be employed.

A DDT-soluble pine oil emulsion has been recommended by the Bureau as a dip for the control of sheep ticks (E-679, Control of the Sheep Tick by a Single Dipping in DDT Emulsion). This emulsion in concentrate form consists of 1 part of DDT in 5 parts (by weight) of soluble pine oil. When diluted to contain 0.2 per cent of DDT it is recommended for the control of sheep and goat lice, as well as sheep ticks. The same emulsion at a strength of 0.4 per cent DDT has been suggested for the treatment of horses infested with winter horse ticks.

An emulsion preparation containing 1 per cent of DDT in the final dilution has also been recommended for the control of head lice and crab lice on man (E-685, Control of Human Lice). This preparation was widely used by our armed services during the war for the control of lice and scabies.

Oil Solutions

Kerosene and other petroleum oils have been widely employed as carriers for DDT sprays. For residual or long-lasting sprays and for space applications the kerosene-base solutions are satisfactory for use in homes and barns. In using them one should give consideration to the fire hazard that may be involved. Kerosene or other oil solutions of DDT are not recommended for application to livestock in quantities needed to provide lasting effects against flies or other insects. DDT in oil is readily absorbed through the skin of animals, and it is well known that excessive amounts of oil alone can be harmful to livestock and other animals.

Oil sprays containing pyrethrum or other toxicants, such as certain thiocyanates, have been used on livestock for many years to provide temporary relief from flies. These sprays were applied in small quantities with mist-type hand sprayers or other atomizing equipment. Usually the amount applied did not exceed 1 ounce per animal, and much of this was not actually deposited on the animals. The deposit which remained was largely on the outer coat of the animal and ordinarily did not wet the skin.

This type of spray has been largely replaced by DDT residual sprays. However, because of its slow action, DDT may not prevent biting by mosquitoes, deer flies, and stable flies, and the insects may or may not be killed after they have fed on the treated animals. The spraying of barns and animals will give excellent control of horn flies and house flies, and will also greatly reduce annoyance caused by stable flies and mosquitoes. Under certain circumstances, where the spraying of barns and animals with DDT residual sprays does not give adequate relief from flies and mosquitoes, the ordinary types of livestock sprays are still in demand. Where such a spray is needed, the addition of low concentrations of DDT (no more than 0.5 per cent) to other insecticides which act more rapidly, such as pyrethrum or certain thiocyanate compounds, will increase the effectiveness of the spray. Experience points rather definitely to the conclusion that DDT may be used in such sprays in concentrations up to 0.5 per cent, without harmful effects on animals.

When oil-base sprays containing a rapid-knock-down agent and 0.5 per cent or less of DDT are sold for use on livestock, it is important that the label should caution users to employ a mist spray and not to wet the skin of the animal with the oil spray. The quantity per application should not exceed 1 ounce of spray for an average-size cow. Satisfactory water-base sprays of this kind could, of course, be employed in the same manner. It is emphasized, however, that the Bureau recommends the application of DDT residual-type sprays for horn fly control, because such a treatment is the most effective and practical method known for the control of this insect. Spraying of barns with this type of spray is also recommended, and only where experience has shown that the ordinary types of livestock sprays are necessary as supplemental treatments does the Bureau suggest their use.

Aerosols

Various methods are being used for producing aerosols, or smokes or fogs containing small particles of insecticides, which remain suspended in the air for some time. The most common method of dispensing insecticidal aerosols is by releasing a liquefied gas such as Freon-12 (dichlorodifluoromethane) containing the insecticide. This method was invented by employees of the Bureau and covered by patents assigned to the Secretary of Agriculture. The gas serves mainly as the propellant for the insecticide and diffuses in the air after its release. Aerosols may also be produced mechanically or by means of heat.

The aerosols are intended primarily for the control of flying insects such as flies and mosquitoes, and if DDT is used in them it is frequently combined with pyrethrum or other insecticides causing rapid paralytic action. The use of aerosols for control of insects affecting animals is still in the experimental stage. Like mist or space sprays, they provide only temporary relief. The aerosol is not considered an economical or effective means of applying residual deposits of DDT.

The use of small containers, such as the customary 1-pound bomb, of gas-propelled aerosols for the temporary control of flying insects affecting animals is not considered practical. In well-constructed barns and similar buildings the release of gas propelled aerosols from special devices or installations has aided in killing flies and related pests. Their use under these circumstances may provide temporary relief in much the same way as do the ordinary oil-base sprays.

Tests with heat-generated aerosols containing DDT have suggested that they may reduce the numbers of flies in barns or similar locations. However, the effect is usually considered temporary. Certain of the machines producing aerosols, known as fog generators, can be adjusted to produce a rather wide range of particle sizes and, under certain conditions, are reported to deposit sufficient DDT to give considerable lasting effect. Whether or not this type of aerosol is economical for this purpose will depend on the circumstances under which it is employed and the cost of the labor involved in applying the treatment as compared with conventional methods. In general, the information available is not sufficient to justify specific recommendations at present.

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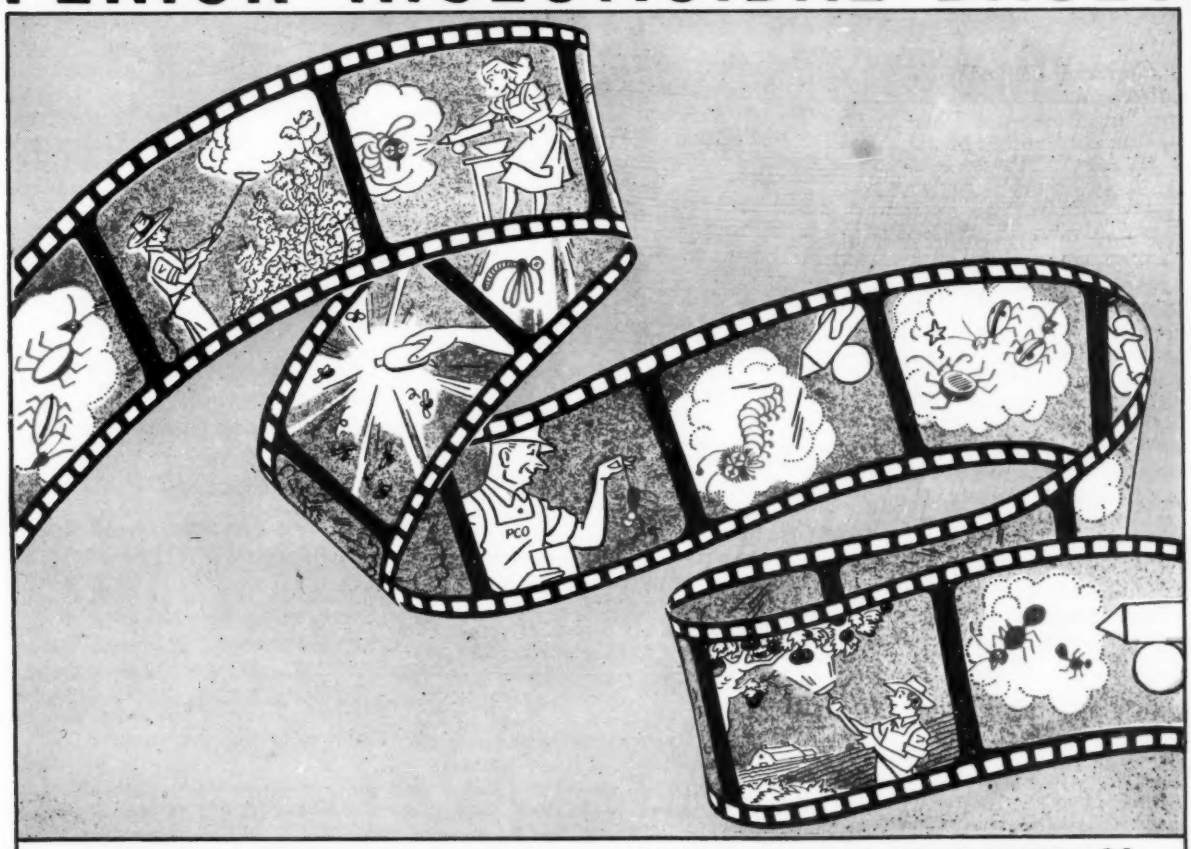

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DDT Insecticides in Public Health Programs

THE meteoric rise of DDT compositions in the insecticidal field during the last three years has given new impetus to public health programs. Since the discovery of the insecticidal properties of DDT, reports have confirmed the most optimistic statements concerning uses in prevention of many diseases of the human race. The startling and almost unbelievable success of DDT louse powders in halting the typhus epidemic in mid-stride in Italy during January 1944 attracted the attention of sanitarians and public health officials the world over. While at about the same time, on the other side of the world, DDT was creating no less of a sensation in the destruction of the mosquito vectors of malaria, the disease which, at the dawn of the Pacific war on Bataan, gave promise of causing casualties equal to, or greater than, those resulting from wounds.

Mosquitoes, flies, lice, fleas, bedbugs and cockroaches are among the insects important to municipal authorities which may be successfully controlled by the judicious application of proper DDT formulations.

In many parts of the United States, the mosquito is still a crucial problem to public health officers because of the malaria microbe it carries, in spite of the encouraging progress made during recent years in its control. Yellow fever, filariasis, and encephalitis are other important diseases associated with this insect. DDT larvacides and residual sprays have been used very successfully by many sanitary engineers and have resulted in the practical elimination of this pest in certain badly infested localities of our country. Of course, constant vigilance must be maintained to prevent reinfestation from surrounding areas and every effort made to drain swampy areas, stagnant pools, and to keep septic tanks tightly sealed to prevent the breeding of larvae.

Purely from a nuisance standpoint, mosquitoes are an important problem around public swimming pools and beaches, since they cause a great deal of annoyance to bathers. This problem is also found in parks, picnic groves, band stands and sports fields. The use of DDT sprays at frequent intervals during the height of the mosquito season on surrounding foliage, benches, etc. will materially reduce the population of this pest and other bothersome insects.

Because the housefly is so common, its importance in the spread of some of our most prevalent diseases is frequently overlooked. This pest is responsible for the distribution of typhoid fever, the various dysenteries and diarrheas as well as those caused by certain parasitic worms and possibly other diseases of the human race.

In this connection, it is interesting to note that during 1945 and 1946 several communities instituted fly control programs with the primary purpose in mind of attempting to halt the spread of polio, San Antonio, Tex., being an outstanding example. Investigators have not agreed that flies definitely carry this disease but the possibility was sufficient reason for San Antonio authorities to undertake a program of spraying the entire city with DDT using a fog machine and other equipment. Many officials feel that the work was a major factor in decreasing the incidence of the disease.

Although rat-borne typhus is not a serious problem in this country at present, reported cases of typhus fever have increased nearly a thousand per year since 1940. The 5,167 cases reported in 1945 probably means that there were about 25,000 actual cases of rat-borne typhus fever. Thus, it is of sufficient importance to warrant strong control measures. Fleas may be controlled by the application of a DDT dust to rat runs and other rat inhabited areas. Rodent abatement and rat-proofing campaigns should be inaugurated in conjunction with the dusting in order to free the community to as great an extent as possible of the hosts of the typhus carrying fleas.

The prevention of louse borne or epidemic typhus fever among humans is principally a question of personal cleanliness as head and body lice are known to transmit this disease. The application of a residual DDT to the hair and clothing will give complete control. A single application of DDT powder in sufficient strength will eradicate the lice if the hair is not washed for ten days after treatment.

In addition to the dust, an emulsifiable product containing DDT developed during the war period, may be used in combating lice.

Teachers in our public schools and officials of institutions frequently find their charges infested with lice Recently, publicity was given to the use of DDT powder in the treatment of school children in Rochester, N. Y. that resulted in a marked reduction in absenteeism for this cause.

Public buildings are often infested with fleas and these may likewise be controlled with DDT dusts or residual sprays. The use of a residual DDT spray in municipal buildings, dormitories and police barracks will not only destroy bedbugs but will prevent reinfestation for 10 to 12 months in many instances. Mattresses, beds and walls should be well covered with the spray.

As for cockroaches, greatest of nuisances in public eating places, extended research by Federal officials has indicated that a combined dust and spray program using DDT will materially relieve the situation. Good sanitary measures should be practiced, of course, at all times. Containers of food as well as garbage should be tightly covered.

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Progress Has Been Made in Florida

JOHN T. CREIGHTON, University of Florida, Gainesville

Note: Dr. Creighton, Head, Department of Entomology, presented the following paper at the Third Annual meeting of the Florida Pest Control Association held March 27, 28, 29, 1947.

It was two years ago that the progressive members of The Structural Pest Control Industry assembled at the University of Florida, and organized the Florida Pest Control Association. This is the third annual meetng of this group.

During the course of the first annual meeting those in attendance projected a program of progress which was designed to lift this industry from the border line position of a racket, which it then occupied, to a position of professional integrity.

Progress is defined as an advance to objectives; or a gradual betterment. I say to you without fear of contradiction that definite progress has been made since our initial meeting during the spring of 1945.

In the establishment of our program a number of objectives were established. Let us review our accomplishments of the past two years in order that we may use this review as a means of planning for the future.

In the field of education advancement has been made. The members of the industry have been quick to realize their deficiencies in the field of education and have consistently endeavored to broaden their knowledge by attendance at regional and state meetings, by assembling books and bulletins dealing with the biology and control of pests involved in Structural Pest Control, and by a willing interchange of practical control information.

During the past two years a concerted effort has been made by this Industry to improve public relations; and create a spirit of confidence among the citizenry. There have come to our attention a number of instances where operators have made wilful efforts to defraud customers. This association has let it be known in definite and tangible ways that it will not tolerate such actions by its members. This has been done by impartial trial and conviction, by your Board of Directors. Such a straightforward approach by this association to purge its ranks of those who, thru their actions, bring disrepute upon all members of the industry, is to be strongly commended.

The establishment of professional standards has been given consideration as an additional means of gaining confidence of the public. This is important and limited consideration has been given this matter at regional and state meetings. Consideration is to be given this subject during this meeting. This must be continued during ensuing years, in order that the consuming public may be in better position to appraise the work that is performed.

One of the most heartening signs that has been in evidence during the two year period has been in the field of business ethics. There is nothing more devitalizing to an industry than poor business ethics among its members. There is no need for such conditions in the pest control industry. It only contributes to decadence. Until the members of this industry attain a full realization of the need for improved client and operator relationship, as well as improved contacts between competitive operators, there will always exist a vulnerable point which may be attacked by those who look upon the industry in an unfavorable light.

The Florida Pest Control Industry has made a democratic approach to the question of Structural Pest Control Legislation. An effort has been conscientiously made to obtain the opinion and advice of all interested parties; as well as all parties who might contribute to the formulation of a strong but fair Structural Pest Control Act. We are indeed appreciative of the counsel obtained. This Act is now ready for action by the Florida State Legislature which will convene its 1947 session on April 9. You can be proud that this association is sponsoring this legislation. It will always be a tribute to your earnest desire to advance your industry.

Research always leads the way in progressive evolution of human activities. The path of progress of the Structural Pest Control Industry is studded with milestones of research achievements which have been accomplished by many scientists.

The Florida Pest Control Association realizes the tremendous need for such research in our state. In 1944 this association established a research fund here at the University which is to be used for essential research whenever sufficient funds are available. Though this is a commendable Act we now realize that this fund cannot satisfactorily meet the research needs. The State of Florida has lagged in its contributions to the Structural Pest Control Field. This has been due to the fact that there has never been funds allocated for this purpose. Certainly this overlooking of an important state need should not continue, and those who recognize and appreciate the importance of such research should urge the appropriation of sufficient funds to make such research an immediate reality. In the final analysis it is truly a state responsibility.

Yes, some of your objectives have been reached. Progress has been made. We must ever remain vigilant, in order that we may sense every opportunity that will encourage the progressive development of this essential Florida Industry.

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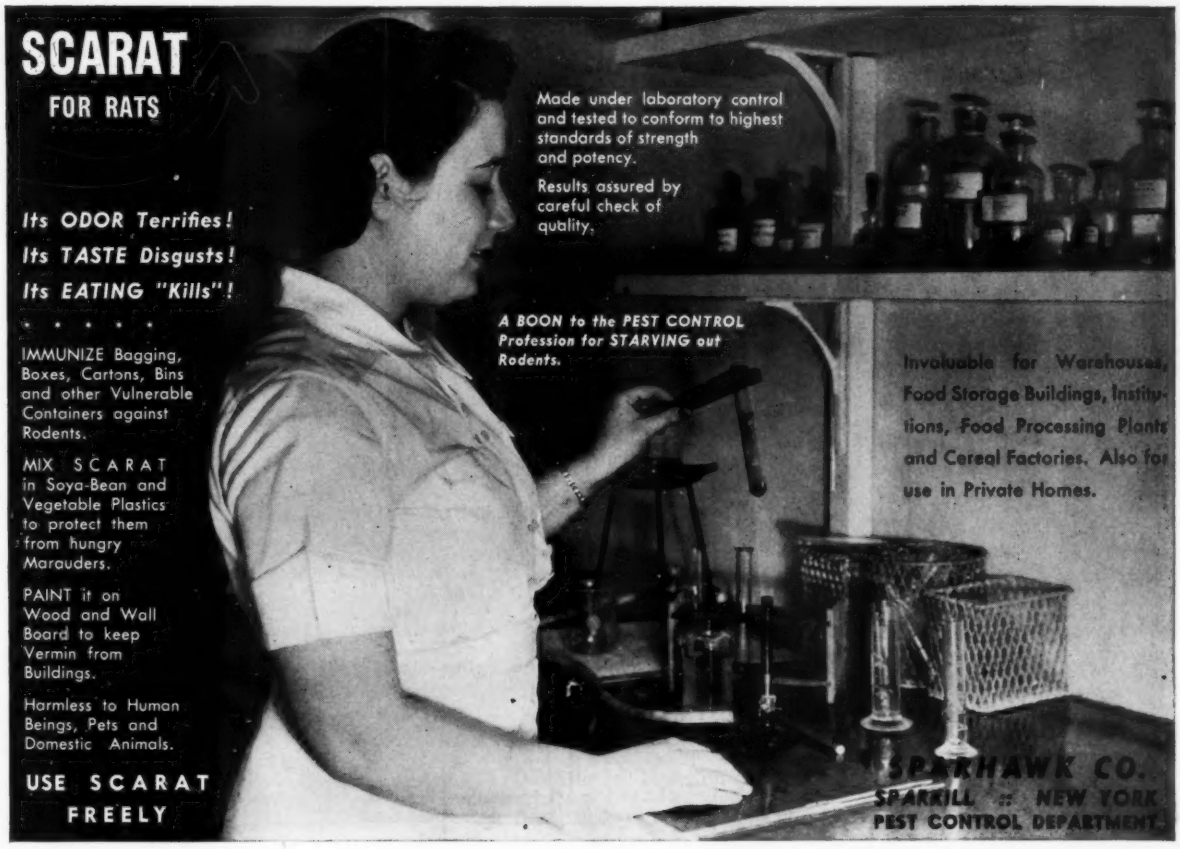
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Third Annual Florida PC Association Meeting

MARCH 27 - 29th, 1947

The Third Annual Meeting of the Florida Pest Control Association was held Thursday, Friday and Saturday, March 27th, 28th and 29th, 1947, at the University of Florida, Gainesville, Florida.

This meeting was sponsored by the Department of Entomology, College of Agriculture, University of Florida and the Florida Pest Control Association, in cooperation with the National Pest Control Association.

This meeting, being for the benefit of every Pest Control Operator in the State of Florida, as well as all members of the Pest Control Association, Inc., was attended by the following:

P. S. Arey, American Cyanamid Co., Montverde, Florida
J. L. Howell, Howell Termite Co., Houston, Texas
H. O. Abel, Abel Exterminating Co., Dallas, Texas, or Houston, Texas
E. Roy Young, Jr., Young-Jones Laboratory, Tampa, Florida
Wm. G. Waldron, Waldron Exterminating Service, Fort Pierce, Florida
J. Y. Rudler, Rudler Exterminating Co., Orlando, Fla.
Robert Hustead, Veterans Exter. Sons. Inc., Miami, Fla.
E. B. Elton, Ace Chem. & Products Co., Jacksonville, Fla.
W. J. Horton, City Pest Control Co., Jacksonville, Fla.
J. P. Walker, Walker Chem. Co., Orlando, Florida.
B. J. Walker, Walker Chemical Co., Orlando, Fla.
W. G. Haile, Jr., Orkin Exterminating Co., Orlando, Fla.
D. R. Barnhart. D. R. Barnhart Co., Daytona Beach, Fla
K. W. Young, Sta-Kil Chemical Co., Daytona Beach, Fla.
W. A. Holmes, Orkin Exterminating Co., Jacksonville, Fla.
Orville P. Brink, Orkin Exterminating Co., West Palm Beach, Fla.
Leon W. Payne, Orkin Exterminating Co., West Palm Beach, Fla.
Bernard Kolkana, Orkin Exterminating Co., Miami, Fla.
W. A. Snare, Biscayne Ext. Service, Miami, Florida
H. O. Earnest, Terminex Company, Miami, Florida
J. M. Roper, Pan-American Chemical Co., Miami, Florida
Newton E. Weiss, Southern Laboratory, St. Petersburg, Fla.
Clifford I. Green, Orkin Exterminating Co., Tampa, Florida
H. D. Miller, Orkin Exterminating Co., Tallahassee, Fla.
Wm. O. Buettner, Nat'l. Pest Control Association, Brooklyn, N. Y.
Arthur Meyers, Florida Pest Control Co., Lakeland, Florida
E. M Holmes, Holmes Exterminating Co., Daytona Beach, Florida
A. P. Stone, Stone Exterminating Co., Jacksonville, Fla.
R. C. Tillman, Southern Exterminating Co., St. Augustine, Florida
W. B. Sumner, Sumner Agency, Miami, & Ocala, Florida
K. E. Sessler, Erwin-Sessler, Miami, Fla.
W. F. Canle, American Cyanamid Co., N. Y. New York
F. Peter Clements, Sou. Pest & Maintenance Service, Ft. Lauderdale, Fla.
F. A. Morton, Broward Ext. & Supply Co., Ft. Lauderdale, Fla.
Theodore Oser, Orkin Exterminating Co., Atlanta, Ga.
W. B. Clements, Homes & Ground Service, Leesburg, Fla.
J. F. Yearty, City Pest Control Co., St. Pete & Tampa, Fla.
H. F. Wilson, D-W Chemical Co., Jacksonville, Fla.
C. E. Doolin, D-W Chemical Co., Jacksonville, Florida
John A. Mulrennen, State Board of Health, Jacksonville, Fla.
Geo. Bote, State Board of Health, Jacksonville, Fla.
Andrew J. Rogers, Dept. of Entomology, University of Florida, Gainesville, Fla.
Paul Hunt, Student-Dept. of Entomology, University of Florida, Gainesville, Fla.
R. P. Goggam, American Cyanamid Co., Madison, Ga.
Clyde D. Flynn, City Board of Health, Jacksonville, Fla.
M. M. Milligan, Student-Dept. of Entomology, University of Fla., Gainesville, Fla.
W. B. Gresham, Student-Dept. of Entomology, University of Fla., Gainesville, Fla.
J. C. Symmes, Student of Entomology, University of Florida, Gainesville, Fla.
Dr. John T. Creighton, Head, Dept. of Entomology, Univ. of Fla., Gainesville, Fla.

In addition to the above, many guests, visitors and wives of members also attended this meeting.

We were honored to have on our program, several Professors from the University of Florida, who spoke on a number of important subjects concerning the pest control industry.

The Third Annual Conference was called to order by Dr. John T. Creighton, Head, Department of Entomology, University of Florida, Gainesville, Florida; and the following program was presented:

Thursday, March 27, 1947 - 10:30 A. M. - Registration - Room 306 - Agriculture Building. Come early and register during these hours.

Thursday, March 27, 1947 - 1:30 P. M. Afternoon Session Room 308 - Agriculture Building, John T. Creighton presiding.

1:30 P.M. Welcome by presiding officer.
1:40 P.M. Address - Mr. Harvey Sturgeon, President, National Pest Control Association, Louisville, Kentucky.
2:10 P.M. Remarks - Mr. J. P. Walker, President, Florida Pest Control Association, Orlando, Fla.
2:30 P.M. Insect Structure and Its Influence Upon Chemical Control. Professor A. J. Rogers, Department of Entomology, University of Florida, Gainesville, Fla.
3:00 P.M. The Development and Behavior of Insects. Professor Milledge Murphey Jr., Department of Entomology, University of Florida, Gainesville, Florida.
3:30 P.M. 10 Minute Intermission.
3:40 P.M. Open Forum - Rat Control (Structural and Chemical), Leader, Mr. Clyde Flynn, City Health Department, Jacksonville, Fla.
5:00 P.M. Adjournment.

The Third Annual Meeting of the Florida Pest Control Association held at the University of Florida, Gainesville, Fla., March 27-29th 1947

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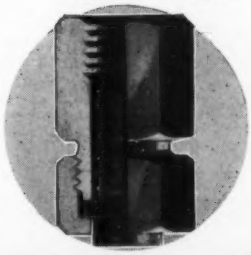

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6:30 P.M. Picnic Dinner. College Park Picnic Grounds, University Campus. Members of Newell Entomological Society sponsoring. Met in front of Agricultural Building at 6:20 P.M.

Friday, March 28, 1947 - 9 A. M.
Morning Session, Mr. J. P. Walker, Presiding, Room 308 Agricultural Building.

9:00 A.M. Open Forum. Termite Control (Structural and Chemical), Leader, Mr. Theodore Oser, Orkin Exterminating Co., Atlanta, Georgia

10:15 A.M. Open Forum. Powder Post Beetles and Similar problems. Leader, Mr. William O. Buettner, Executive Secretary National Pest Control Association, Brooklyn, New York.

11:30 A.M. Business Session
A. Report of Secretary-Treasurer, Mr. Walter A. Helms.
B. Appointment of Committees.
1 Resolutions.
2 Auditing.
3 Nominating.

11:50 A.M. Official Photograph; of all in attendance. West side of Agricultural Building.

12:00 Noon Adjournment.

1:30 P.M. Afternoon Session, Room 308 Agricultural Building, John T. Creighton, Presiding.

1:30 P.M. The Chemical Treatment of Lumber for Use in Building Construction. Mr. W. O. Boehm District Salesmanager, The American Lumber and Treating Company, Chicago, Ill.

2:00 P.M. Inspection Tour
Stop Number 1., Project A., Termite Control. Demonstration by the Florida Pest Control Association. Stop Number 2., The treating Plant of The American Lumber and Treating Company. Stop Number 3, Project B, Termite Control, Demonstration by the Florida Pest Control Association.

5:00 P.M. Adjournment.

7:00 P.M. Annual Dinner. Florida Pest Control Operators, their wives and friends were invited. Primrose Grill, 322 West University Avenue.

Saturday, March 29, 1947 - 9:00 A. M. Morning Session.
Room 308 Agricultural Building. Mr. J. P. Walker, Presiding.

9:00 A.M. The Industry Sponsored "Structural Pest Control Act" is ready for Legislative Action. Dr. John T. Creighton, University of Florida, Gainesville, Florida.

9:10 A.M. The State Health Department will accept enforcement responsibility if the Act is approved. Mr. John A. Mulrennan, State Board of Health, Jacksonville, Florida.

9:20 A.M. Open Forum, Unit Prices For Pest Control and Termite Services. Leaders: Mr. J. M. Roper, Pan-American Chemical Company, Miami, Fla. Mr. Walter A. Helms, Orkin Exterminating Co., Jacksonville, Fla. Mr. J. P. Walker, Walker Chemical & Ext. Co., Orlando, Florida.

11:00 A.M. Final Business Session.
A. Report of Auditing Committee.
B. Report of Resolutions Committee.
C. Report of Nominating Committee.

12:00 Noon Adjournment.

One of the most important subjects discussed at this meeting was the final approval by the Association of the Structural Pest Control Act of 1947, which is to be presented at the coming session of the Florida State Legislature.

A delightful time was had by all present at a picnic dinner sponsored by members of the Newell Entomology Society, which was held Thursday afternoon, March 27th, 1947. The third annual dinner was held at the Primrose Grill, Gainesville, Florida; Friday evening, March 28th, 1947.

The following officers and directors were elected to serve the Association for the coming year:

President, J. M. Roper, Miami, Florida.
Vice President, Arthur Meyers, Lakeland, Florida.
Secretary-Treasurer, Walter A. Helms, Jacksonville, Fla.
Board of Directors, O. P. Brink, West Palm Beach, Florida; F. deL. Clements, Ft. Lauderdale, Florida; W. J. Horton, Jacksonville; and J. P. Walker, Orlando, Fla.

The entire membership of the Florida Pest Control Association wishes to express their appreciation in thanks for the valuable assistance given by Dr. John T. Creighton and Mr. Wm. O. Buettner, as well as to the University of Florida faculty members, who gave splendid cooperation in making our meeting a great success.

Campaign On to Prevent Dysentery

Because of the recognized importance of fly control in protecting public health and because the PCO is well equipped, practically and technically, for the central role of applicator in fly control, the following article from the N. Y. Times is of germane and timely interest.

Bacillary dysentery (also known as Shigellosis), like its cousins, typhoid and salmonella, is transmitted by means of a specific germ from the intestine of one person (or animal in the case of some salmonella infections) to the mouth of another. The conveyors are fingers and flies. Food thus contaminated can be rendered safe by boiling for ten minutes provided it is not again exposed to germs. Strangely enough, cockroaches play little, if any, role in the spread of intestinal infections. They are insignificant agents when compared to infected flies, rodents or food-handling men and women. In many restaurants, flies wing their way from toilets to food.

In beginning its second annual campaign the Pan American and International Dysentery Registry is doing its best to drive home the importance of good sanitation in restaurant and home kitchens and of personal hygiene. An infected mother should not only scrub her hands thoroughly with soap and water, but also clean under her fingernails with an orange stick before handling food. Commercial foodhandlers are more difficult to control. Many a glamorous chromium-plated restaurant exterior conceals a filthy kitchen infested with vermin.

Equipment is No Safeguard

Automatic dishwashing machines afford no security, if suitable detergents and water at 180 degrees are not used. Even knives, forks and spoons that have been sterilized are rapidly contaminated in cafeterias as each customer dips into open trays and adds his quota of germs to the growing collection.

Outbreaks in summer camps are traceable to poor sanitary facilities, flies, unsupervised food handling and contaminated water or milk. Control by public health officials is difficult because of the short season, but none the less imperative. This also holds good for trains, ships and trailer camps.

In a dysentery survey of the United States made by Dr. Joseph Felsen last summer, the kitchen and food handling facilities on our long-distance trains were found to be deplorable. The trailer camps in our national parks with supervised water supplies and sewage disposal were for the most part in excellent condition. There was virtually no control at the border. Americans were permitted to visit endemic and epidemic areas of dysentery in Mexico without even a warning.

Precautions in Summertime

No program to prevent dysentery can be effective without the cooperation of the average citizen. Ask your state Department of Health about the sanitary conditions of a summer camp to which you are thinking of sending your children. Avoid a hotel where "everybody has diarrhea when they first arrive, until they get used to the water." Judge a restaurant by its cleanliness and its way of handling food. Avoid the restaurant that declines to permit inspection of its kitchen. When traveling carry your own box lunch and water from a known safe source or drink bottled waters and pasteurized milk from the original unopened containers. If in doubt, boil food or drink and keep it clean until served.

To enlist the cooperation of the public, of physicians and public health officials, the Dysentery Registry under the direction of Drs. Joseph Felsen and William Wolarsky, at the Bronx Hospital, New York City, will lend without charge a motion picture film "From Hand to Mouth" for the use of schools and public health workers and a teaching set in Kodachrome for medical colleges. W. K.

Unexplained Energy of Insects

Macey F. Deming of Tappan, N. Y., reports that insects in vast swarms fly from the mainland to Bermuda, more than 500 miles; from the coast of California to the Hawaiian Islands, more than 2,000 miles, and from the United States to Europe, more than 3,000 miles. Swarms of butterflies have been met in the Atlantic and Pacific Oceans 1,000 miles from land.

The ocean water is salt and there is no place for the insects to obtain food, water or rest. They have to be in constant motion all of the time.

The golden plover, a land bird, is know to fly 1,700 miles over the ocean without stopping, and other small land birds fly 1,000 miles over the sea regularly without food or rest.

Here is a field for young biologists to explore. How do animals manage to live and travel under the conditions described?

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LOCAL ORGANIZATION NEWS

Missouri Pest Control Ass'n.

32 attended a very lively regular quarterly meeting of the Missouri Pest Control Association held at Daniel Boone Hotel, Columbia, Mo., on May 10, 1947.

The principal speakers were Mr. Ira Hatfield, Planetary Chemical Co., Creve Coeur, Mo., who spoke on "Life History of Termites." Wm. O. Buettner, Secretary of the NPCA, led the discussion on the 1-2-3-3½ method of termite control which was followed by a five minute question and answer period. Dr. Lloyd R. Gates, City Health Dept., Kansas City, Mo., discussed the recent rat control campaign and the developments in Kansas City. Dr. J. W. Hunt, of U. S. Public Health Dept., outlined some of the principles of the Health Departments in both St. Louis and Kansas City. Wm. O. Buettner presented an overall picture of developments and policies in rat control service.

Much could be said regarding the vital importance of these various PCO meetings that take place throughout the country for the benefit of all PCO's. It is here at these meeting that general discussion of various PCO problems is presented and talked over with one another. Such meetings are bound to cement members together as well as to teach them more about their own business and how to work and cooperate together as an industry.

It is the purpose of the Association to discuss vital subjects at its regular meetings. The subject scheduled for the next meeting is "Moth and Carpet Beetle Control and fumigation."

Those who attended were:

F. R. Andrews, Andrews Exterminating Co., Kansas City, Mo.,
W. A. Barber, Sam C. Dews Co., Kansas City, Mo.,
G. L. Glen, Rose Exterminator, St. Louis, Mo.
A. J. Danella, Acme Exterminators, Kansas City, Mo.
Charles Denny, Charles Denny Co., St. Louis, Mo.
George A. Dyche, American Exterminating Co., Kansas City, Mo.
W. F. Exner, Termite Control, Webster Grove, Mo.
U. O. Hawks, Inter Exterminator Co., Springfield, Mo.
John Karleskint, American Extg. Co., St. Louis, Mo.
A. L. Linck, Paramount Fumigating Co., Kansas City, Mo.
James C. Logan, Logan Ter. Exter. Service, Cape Girardeau, Mo.
Roy H. McCullough, Modern Fumigating Co., St. Louis, Mo.
Charles A. Maly, Maly Brothers Termite Control, St. Louis, Mo.
Arthur Ochs, Antimite Termite Proofing Co., St. Louis, Mo.
Glenn Burnett, Getz Exterminators, Inc., St. Louis, Mo.
John Russell, Mexico Chemical Co., Mexico, Mo.
Jac Shafer, Shafer Pest Control Service, St. Louis, Mo.
Revnold Shuyler, Termite Exterminating Co., Kansas City, Mo.
J. W. Grogan, Ragan Exterminating Co., Kansas City, Mo.
Henry L. Sherman, East Exterminating Co., St. Louis, Mo.
Miss Lee A. Sain, ABC Exterminating Co., St. Louis, Mo.
L. J. Wicker, National Exterminating Co., Kansas City, Mo.
M. J. Millberger, Interstate Exterminator Co., Kansas City, Mo.
O. M. Weigle, Kingdom Chemical Co., Fulton, Mo.
Henry Isherwood, Antimite Co., St. Louis, Mo.
Dr. J. W. Hunt, U. S. Public Health Service
Dr. L. R. Gates, City Health Dept., Kansas City, Mo.
L. A. Gustafson, Pest Control, Wadsworth, Kansas
P. C. Stone, Dept of. Entomology, University of Mo.
W. B. Hill, Hill Termite Control Systems, Memphis, Tenn.
Dr. Leonard Haseman, University of Mo.
Wm. O. Buettner, Secretary, NPCA, N. Y.

Cincinnati PC Association

The Cincinnati Pest Control Association held their annual election of officers on April 29, and the following were elected to office for the coming year.

President, William Warthen, Vogel Ritt Co.

Vice-President, Richard Meyer, American Extermination Inc.

Secretary & Treasurer, Robert J. Sikorski, Orkin Exterminating Co.

New York State Pest Control Association Formed

Representatives of seventeen firms in upstate New York gathered in the offices of I. B. Carncross, Syracuse Chemical Co., Syracuse, N. Y. on April 12, 1947 to organize the New York State Pest Control Association. William O. Buettner, secretary, National Pest Control Association, was the honored guest and acted as advisor to the group in details of organization. I. B. Carncross and Donald H. Lewis were named temporary chairman and secretary, respectively.

The meeting proceeded with discussion of the aims of the organization, membership qualifications, constitution and dues. Leon A. Moore and Harry Linnindoll were appointed to prepare a constitution and bylaws. At this time William O. Buettner presented specimen copies of other constitutions for study by the the committee and offered suggestions on organization.

The advisability of holding a short course for PCO's at Cornell University was discussed and it was unanimously agreed that such a project be initiated.

Those in attendance were:

Walter Blank, Abalene Pest Control Service, Inc.
C. W. Bohman, The Bohman Brothers, Inc.
E. J. Browne, County Chemical Co.
William O. Buettner, National Pest Control Association
Louis Burger, American Exterminating Co.
I. B. Carncross, Syracuse Chemical Co.
Harold L. Clarke, Clarke Chemical Co.
George W. Dummitt, Arrow Exterminating Co.
Paul L. Galloway, Syracuse Victory Supply Corp.
L. Harrington, Buffalo, N. Y.
Donald H. Lewis, Rose Exterminating Co.
Harry W. Linnindoll, Harry W. Linnindoll Co.
John J. McMahon, McMahon Brothers
Robert J. McMahon, McMahon Brothers
Leon A. Moore, L. A. Moore & Co.
K. D. McLeod, City Exterminating Co., of Buffalo, N. Y.
Robert M. Small, Small's Control System
William H. Viel, City Pest Control
William J. Wolfson, National Disinfecting Co.

Connecticut PC Assn.

The Connecticut Pest Control Association held their 9th Annual Banquet at the Hotel Bond, Hartford, on April 22nd, at which time they were addressed by an official of the Health Department of Hartford, Mr. H. H. Bourne, who talked on sanitation in the City of Hartford, relative to extermination of vermin.

Mr. William Buettner, secretary of the National Pest Control Association stressed the need of restoring public respect in this industry, that many people still believe that there are racketeers in our industry, because there are still a few who make "exaggerated claims".

A roast beef dinner was served at which 50 members from all over Connecticut and Massachusetts attended, among which were:

Lester M. West, Rose Extermination Co., Boston, Mass., B. W. Eldredge of Waltham Chemical Co., Worcester, Ken. N. Cook, of the Waltham Chemical Co., Worcester., Wm. Banta and W. J. Ghent of the Merritt System, Milford Conn., Charles N. Egan, Trinity Extermination Service, Hartford, Conn., W. B. Becker, F. R. Shaw and Arthur I. Pourne of the Mass. State College, Amhert, Mass., R. B. Friend, Chief of The Conn. Agricultural Experiment Station, New Haven, Charles J. Horwath and Bert G. Carlson from Bridgeport Exterminating Co., Clifford Waterhouse, Sherwin Williams Co., Mr. Gene Theroux, Branford, Conn., John Duncan, New Haven, Russell D. Brennan, Norwich and Russell Beck of the Ace Exterminating Co., Norwich. Conn., Andy Anderson, and Thomas Ledwith, Berg Exterminating Co., Hartford, Joes. Putinski, New Britain, Conn., D. F. Mason, Mason Exterminating Co., New Haven, F. E. Bohman, Birchard System, Hartford, Fred Haas, Aetna Exterminating Co., Hartford, Jack Kalison and George Blum, from Acme Pest Control Co., New Haven, David A. Weisburger, New York City, Grace C. and Geo. W. Dyer, Rose Exterminating Co., Hartford. F. J. Lavery, Hartford, Joe Roog, Atlantic Ext. Co., Hartford, Neeley Turner, Conn. Experimental Station, New Haven, Conn., L. A. Bureau, A. B. C. Ext. Co., New Haven.

A film was shown by Esso Marketeers, which showed beautiful North Carolina as a vacationland, Pestroy film and Weedone, also were very interesting. A magician entertained also.

—Submitted by, Charles G. Egan
Secretary and Treasurer

Georgia Pest Control Assn.

The Georgia Pest Control Association held their annual meeting at the Piedmont Hotel in Atlanta, Georgia on April 18-19th. The meeting was very well attended and much was accomplished for the benefit of the Industry in Georgia.

Legislation to be presented to the next Legislature was discussed by Mr. Charles Alden, Director of the State Department of Entomology, who has been of immeasurable aid in getting up the proposed legislation.

Mr. Roy Boston, Director of Typhus Control for the state Health Department discussed the work of his department in the control of typhus in the State. Mr. Boston pointed out that in 1945 there were 1111 cases of typhus with 59 deaths. In 1946 the number of cases was reduced by 47.4%. The matter of the pest control industry taking part in the typhus control program was discussed at length and the future

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Super Fluorex V, powerful insecticide powder

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Poison Seeds

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Prepared Rat Baits — convenient, ready-to-use cubes. Five different food types.

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in this direction looks encouraging. The U. S. Public Health Service and the Atlanta City Health Dept. were well represented with talks by Major John S. Wiley and Captain R. J. Hammerstrom. With rodent control taking the spotlight, a demonstration on bait mixing by Fred A. York, Jr. was most timely and interesting.

The busiest man in our Industry, of course, is William O. Buettner. In spite of the great demands on his time, he took time out from his busy schedule to attend the Georgia meeting. With Bill's vast knowledge of our Industry he was of great assistance in every phase of discussion, not to mention his very interesting address at the annual banquet held on Friday evening, at which there was an attendance of 44.

The next meeting of the Association will be held in Savannah, Georgia and other than Mr. Glenn H. Burnett, who was re-elected President, the following officers are serving for their first time:

Karl P. Conradi, Thomasville, Georgia, Vice President.
Theodore Oser, Atlanta, Georgia, Secretary & Treasurer
Marcus R. Kaplan, Macon, Georgia, Director.
Robert M. Russell, Augusta, Georgia, Director.
H. Furman Yates, Savannah, Georgia, Director.

By unanimous vote Mr. Charles H. Alden and Mr. Roy J. Boston were elected honorary members.

Those who attended were:

John D. Adams, Orkin Exterminating Co., Inc., Athens, Georgia
C. H. Alden, Director, State Dept. of Entomology, Atlanta, Georgia
James, L. Allgood, Georgia Exterminating Co., Marietta, Georgia
Howard L. Baer, Howard Paper Co., Atlanta, Georgia
Ralph M. Berry, Henry W. Gullatt Co., Atlanta, Georgia
Rov J. Boston, Director, Typhus Control Service, Ga., Dept. of Public Health, Atlanta, Georgia
Capt. Ross W. Buck, U. S. P. H. S., Atlanta, Georgia
William O. Buettner, Secretary, National Pest Control Association. Brooklyn, N. Y.
Glenn H. Burnett, Getz Exterminators, Inc., Atlanta, Georgia
Albert F. Conradi, Conradi Pest Control, Thomasville, Georgia
Karl P. Conradi, Conradi Pest Control, Thomasville, Georgia
J. H. Cornett, City Health Department, Atlanta, Georgia
H. O. Cunnard, Cunnard Exterminating Co., Atlanta, Georgia
Harry C. Essick, U. S. P. H. S., Atlanta,, Georgia
J. W. Farrar, Orkin Exterminating Co., Inc., Atlanta, Georgia
Tom Forshaw, Chapman Chemical Co., Charlotte, N. C.
Thos. Y. Gibson, Wright Pest Control Co., Macon, Georgia
R. P. Goggans, American Cyanamid Co., Madison, Georgia
Henry Greene, U. S. P. H. S., Macon, Ga.
Clarence O. Grogan, City Health Department. Atlanta, Georgia
Capt. R. J. Hammerstrom, U. S. P. H. S. Atlanta, Georgia
Eugene O. Harrison, Georgia Exterminating Co., Athens, Georgia
Marcus R. Kaplan, Orkin Exterminating Co., Inc., Macon, Georgia
Forrest H. Knox, Biltmore Exterminating Co., Inc., Atlanta. Georgia
Robert M. Maples, Wright Pest Control Co., Macon, Georgia
Wesley G. Morgan, E. I. duPont de Nemours & Co., Atlanta, Georgia
Wilbur Edward Morris, Reliable Exterminating Co., Augusta, Georgia
Richard H. Nolen, Nolen Exterminators, Inc., Atlanta, Georgia
W. E. Norvell, Wood Treating Chemicals Co., Chattanooga, Tenn.
Theodore Oser, Orkin Exterminating Co., Inc., Atlanta, Georgia
Luther T. Pitts, Biltmore Exterminating Co., Inc., Atlanta, Georgia
Robert M. Russell, Georgia Exterminating Co., Augusta, Georgia
George R. Scott, Ashcraft-Wilkinson Co., Atlanta, Georgia
Wm. T. Sisson, City Health Department, Atlanta, Georgia
Charlie Emmitt Sowell, Atlanta Exterminating Co., Atlanta, Georgia
Luther S. Standifer, U. S. P. H. S., Atlanta, Georgia
Rufus L. Tindol, Jr., Georgia Exterminating Co., Atlanta, Georgia
Chas. W. Vaughn, Atlanta Exterminating Co., Atlanta, Georgia
Major John S. Wiley, U. S. P. H. S., Atlanta, Georgia
Augustus B. Wright, Orkin Exterminating Co., Inc., Atlanta, Georgia
Fred P. Wright. Wright Pest Control Co., Augusta, Georgia
H. Furman Yates, Yates Exterminating Co., Savannah, Georgia
Fred A. York, Fred A. York, Atlanta, Georgia
Mrs. Fred A. York, Fred A. York, Atlanta, Georgia

NJPCA Holds Open Meeting

The New Jersey Pest Control Association carries out its current aim of intensive public relations work by holding an Open Meeting at the Newark News Auditorium, at Newark, New Jersey on May 8th, 1947.

The subject of the Meeting was the "Housefly" and the well rounded program consisted of a talk by captain Sheldon L. Lang, of the United States Public Health Service. His subject was "Flies as a Health Menace". His lecture was supplemented by sound movies which fully demonstrated not only the complete life cycles of these pests, but also their potential hazards because of their ability to carry disease by moving from filth to food.

Captain Lang's part of the program was followed by Mr. John A. Stoddard of John Powell and Company who demonstrated a portable Peet-Grady Chamber and also spoke of the differences between contact and residual insecticides.

Having told the audience of the hazards of flies and some of the insecticides that can be used for their control. the program was brought to a logical climax by Herb Meyers, Director of the National Pest Control Association who spoke on the "PCO and Fly-Control". Mr. Meyer's talk was highly illuminating and as usual properly spiced with appropriate anecdotes. His talk informed the audience on what they themselves can do for proper fly control, and also the PCO's place where the fly problem is beyond the capabilities of the general public.

Refreshments were served at the close of the meeting and general satisfaction was expressed by those who had the pleasure of attending. Mr. Abe I. Charnack, President of the New Jersey Pest Control Association was congratulated for having carried on the work started by his predecessors.

The capacity crowd consisted of members of the New Jersey Pest Control Associations. a large delegation from the Professional Exterminators of New York, as well as Health Officers and Parent-Teachers Associations, Chamber of Commerce, Kiwanis, Rotarys, Lions and other Civic organizations. Alse requested were, Restaurant Owners Associations, Hotel Managers Associations, and other trade groups.

submitted by JOHN K. MEDOFF

St. Louis PC Association

On the night of May 8, 1947, a dinner was held in the York Hotel Coffee Shop, St. Louis, Mo., to welcome Bill Buettner to town. Bill was here to lend moral support and to gather information for the purpose of comparing Rat-proofing work as done by the city and as done by private operators and to determine if there was unfair competition. A meeting was held after the dinner at which time the subject was hashed and rehashed. All present agreed that the discussion was both constructive and of interest. Those attending were:

R. J. Broderick; Rose Ext. Co.
V. A. Bryant; W. B. McCloud & Co.,
Bill Buettner, Secretary NPCA
Glen Burnett; Getz Ext. Co.
G. Clem; Rose Ext. Co.
Ed. Decker; G. S. Robins & Co.
Chas. Denny; Chas. Denny & Co.
Wm. Exner; Termite Control Co.
Ira Hatfield; Planetary Chem. Co.
Mr. Koehler, Monsanto Chem. Co.
W. Langley; Woods System of Vermin Cont.
J. P. Linn; Antimite Co., Omaha, Nebr.
C. Maly; Maly Bros. Termite Control
R McCullough; Modern Fum. Co.
J. O. Millspaugh; Millspaugh Chem. & Serv. Co.
Arthur Ochs; Antimite Co.
T. Raley; Getz Ext. Co.
L. Sain, ABC Ext. Co.
E. Sennewald; Sennewald Drug Co.
J. Shafer, Jac Shafer Pest Control Serv.
H. Sherman; East Side Ext. Co.
J. B. Sims; J. B. S. St. Louis Pest Control
H. Trott; Louis Traband Co.
T. E. Woods; Woods System of Vermin Control

NAIDM Meets June 9-11

The thirty-third mid-year meeting of the National Association of Insecticide and Disinfectant Manufacturers will be held at the Edgewater Beach Hotel, Chicago, June 9-11. Program talks will include:

"Current Legislation" by W. J. Zick, B. Heller & Company, Chicago.

"Iowa Fly Control Program," by Dr. Howard Gunderson, extension entomologist, Extension Service, Ames, Iowa.

"The Future of Household Insecticides," by Dr. S. A. Rohwer, assistant chief, Bureau of Entomology & Plant Quarantine, U. S. Department of Agriculture.

"DDT Surface Residues," by H. A. U. Munro, fumigation laboratory, Department of Agriculture, Montreal.

"Testing Residual Sprays," by Dr. M. H. Doner, J. R. Watkins Company, Winona, Mich.

"Technical and Commercial aspects of 2,4-D," by Dr. L. W. Kephart, in charge, weed investigations, U. S. Department of Agriculture.

"The Newer Synthetic Insecticides," by E. F. Knipling, in charge, division on insects affecting man and animals, Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture.

"Problems Facing Household Insecticide Industry," by A. W. Miller, Gulf Research & Development Corporation, Pittsburgh.

Symposium on Insecticide Raw materials, J. A. Jenemann, E. I. du Pont de Nemours & Company, leader.

"A Mothproofing Larvacide," by Dr. Nicholas Molnar, Fine Organics Inc., New York.

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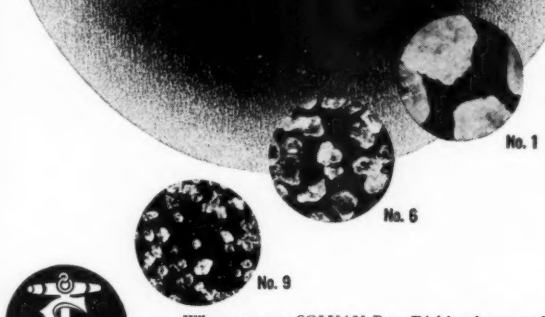

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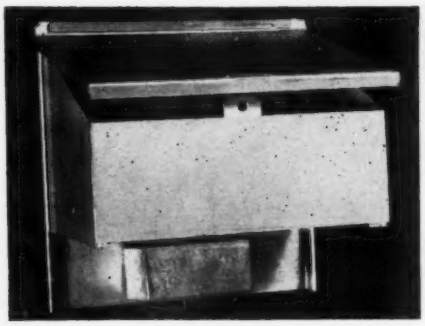

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Keeps Pigeons, Starlings and Other Birds from Buildings

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For Rats, Mice and the Large Brown and Black Roaches

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WHAT'S NEW IN PEST CONTROL-PERSONALS

Condolences

Mr. Edna Hirst, beloved wife of Edward Hirst, owner of the Pioneer Exterminating Co., Inc., New York, N. Y., and devoted mother of Barbara, Patricia and Ned, passed away on April 5th, 1947 and funeral services were conducted on April 7th, 1947 at the Riverside Memorial Chapel, 86th St., & Amsterdam Avenue, New York, N. Y.

Dr. H. L. Haller

Dr. H. L. Haller, U. S. Department of Agriculture scientist, with an international reputation in organic chemistry, has been appointed special assistant to Dr. P. N. Annand, Chief of the Bureau of Entomology and Plant Quarantine. Dr. Haller has been assistant leader of the Bureau's Division of Insecticide Investigations since 1937.

A graduate of the University of Cincinnati and Columbia University, Dr. Haller served as chief chemist for the Jereki Chemical Company, Cincinnati, Ohio until 1921, when he accepted a position as research chemist for the Rockfeller Institute for Medical Research. He came to the Department of Agriculture in 1929.

One of Dr. Haller's outstanding contributions to science - made in collaboration with Dr. L. B. LaForge and L. E. Smith, is the determination of the chemical structure of rotenone, an important organic insecticide. The Washington Chemical Society awarded its Hillebrand prize for 1932 to Dr. Haller and Dr. LaForge for this achievement.

During World War 11 Dr. Haller and his associates coordinated and executed a series of research programs on DDT and other insecticides that effectively protected our armed forces against insect-borne disease. This program included the synthesis of new chemical materials and their conversion to forms suitable for military use.

Dr. Haller's new assignment covers the various chemical aspects of the Bureau's problems involving the development, manufacture, and use of chemical insecticides. Also, he will act as liaison officer between the Bureau and manufacturers of insecticidal chemicals.

Ronald Samuel Weening

"Another bulb-squeezer and sprayer expert arrived on the 28th of April, 1947. Ronald Samuel, weighed 6 pounds 11 ounces. Mother and son are doing fine", writes Bernard E. Weening of Paragon Exterminating Co., Newark, N. J. And he adds: "We enjoy Pests and make it a habit to read it from stem to stern. Keep up the good work and articles." Thanks, Bernard. We hope the father is doing well, too. Congratulations and best wishes.

Vogel-Ritt, Inc.

Vogel-Ritt, Inc. of Detroit, Michigan have moved into their new location, 7420 Tireman Ave. Best wishes.

Barber Plant Destroyed By Fire

Fire caused by exploding chemicals on March 21, destroyed the Barber Laboratories of New Orleans, La., and damaged two other buildings from a nearby housing project. Damage to the Barber plant was placed at $75,000. Ernest Barber, owner of the Barber Laboratories, reports the fire started while he was heating some anthracine, a chemical used in the manufacture of his insecticides.

Sager, Tidwell, Joins Westvaco Agricultural Sales

W. L. (Bert) Sager has joined the Agricultural Chemicals Division of Westvaco Chlorine Corporation, 405 Lexington Avenue, New York City.

Mr. Sager, formerly Westvaco sales representative for bulk chemicals in Brooklyn, will specialize in the sales and service of Westvaco's fumigants, including Grain and Soil fumigant mixtures and Methyl Bromide.

Charles H. Tidwell has also joined Westvaco's Agricultural Chemicals Division. He will maintain offices at Orlando, Florida, for the distribution of Wesvaco Agricultural Chemicals in the States of Alabama, Florida, Georgia, Mississippi and South Carolina.

Before his release from service with the United States Army he was graduated from Texas A & M, in which State he made his home.

Tanglefoot Co., Plugs Difusolier

The Tanglefoot Company, Grand Rapids, Mich, has launched the first sectional newspaper and spot radio campaign for its postwar Difusolier, a small electrical appliance designed to throw a lethal fog upon insects inhabiting business establishments.

The campaign has opened in Kansas City, Wichita, St. Louis and Memphis. Additional drives will be started in other sections of the U. S. this spring. Advertising is aimed not at consumers but at bakeries, furriers, hospitals, bottlers, drug stores, taverns, cafeterias, hotels and the like. The appliance costs between $25 and $30.00, depending on the area of sale.

Newspaper copy and dramatized spots emphasize that the Difusolier provides "safe insect control." The Difuso liquid used, unlike DDT and many other strong insecticides, does not harm food, fabrics or pets.

Difuso contains pyrethrum, "the essence of the African daisy." The Difusolier sprays the pyrethrum-base Difuso in a fog, not a mist, so that it is more penetrating than many insecticides. It kills moths, cockroaches, flies and other insects, it is claimed.

The Difusolier has been on the market for about a year, and has been advertised through publications going to institutional trades.

Trimz Launches New Wallpaper Containing DDT

Ready, pasted wallpaper which is treated with DDT for health protection in children's rooms will be offered to the public late this month by Trimz Company, Inc., a division of United Wallpaper, Inc., Chicago. National consumer magazine advertising will begin in June.

The new wallpaper will be offered through department stores and other regular retail outlets and will get its biggest boost during the warm weather season.

The wallpaper is being placed on the market after 27 months of laboratory testing and about 17 months of tests under actual residential conditions. Impregnated with a 5 per cent solution of DDT in the coating and colors, the paper carries a health protection guarantee of one year, although tests, it is stated, have shown that it will be effective even after two years. The paper is odorless and completely harmless to children and pets, the company says.

Mosquito Control Called World Boon

Atlantic City, N. J.,—International cooperation in the control of mosquitoes and other dangerous or bothersome insects, a movement spurred by the war, was described April 2 as a boon to international understanding as well as health.

Dr. F. C. Bishop of the Bureau of Entomology and Plant Quarantine at Washington, who spoke at the opening of the thirty-fourth annual meeting of the New Jersey Mosquito Extermination Association, said: "Much new and valuable information on the mosquitoes of the world—their identity and their habits, their potentialities for disease transmission and how to combat them, has appeared in all quarters of the globe."

Wallace T. Eakins, assistant chief of the State Department of Health, Trenton, reported that since the cooperative plan of malaria control went into effect in New Jersey in 1944 only twelve persons were known to have been infected by malaria within the State. During the three years 3,000 cases of imported malaria were recorded, mainly among returned service men, he said.

Sprayer Corp. Moves Plant

Announcement is made of the change in location of their headquarters by the Sprayer Corp of America, from their present location, 1812 W. Winona St., Chicago, to new and larger quarters at 1712 Payne St., Evanston, Ill. This move will enable them to extend their facilities for rendering improved service to their rapidly growing clientele. Their products included a complete and varied line of electric sprayers for spraying liquid insecticides. Their units are motorized for compression and fan-type spraying. They do not manufacture or sell insecticides, but confine their activities to the design, and production and marketing of sprayers modernized to meet new and changing conditions.

Leaflets

How to control fleas. F. C. Bishopp, Bureau of Entomology and Plant Quarantine. 4 p., illus. (L152, rev.). Price 5c. This leaflet has been revised to include the use of DDT in the control of household pests.

California PC Conference Manual

Because of many requests for a manual of the proceedings of the State Conference-Convention recently held in Riverside, California, it was decided to have these proceedings printed in a manual form.

Much valuable information is contained in this manual. It is expected to have these manuals ready by June 1st. The price is $5.00 a copy. Those who desire a copy, please write to G. B. Warders, Secretary, Pest Control Operators of Calif., 126 No. Second St., Upland, Calif.

Mosquito Control Group Elects Russell President

Dr. David L. Russell was elected president of the New Jersey Mosquito Extermi-

"TOX-EOL" for TERMITE CONTROL

TIME TESTED

TIME PROVED!

A large volume Termite Control Operator recently wrote us,

"Used your chemical since August, 1941, with an almost 100% efficiency . . . proud of results."

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"TOX-EOL" **Toxic base is chlorinated phenol plus. Is economical and not unpleasant to use. Effective for both wood and soil poisoning. Present cost less than creosote. Shipped in a highly CONCENTRATED liquid saving transportation charges.**

Send today for advertising and dealer co-operation plan.

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Pioneers in the use of Chlorinated Phenols for termite control.

Now located in our new plant:
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— Calendar of Meetings —

NAIDM Midyear Meeting, Edgewater Beach Hotel, Chicago, June 9-11, 1947.

National Association of Building Owners and Managers, Hotel Statler, Boston, June 23-26, 1947.

NPCA Convention - October 27, to 29, 1947, Bellevue Stratford Hotel, Philadelphia, Pa.

NAIDM's 34th Annual Meeting at Lord Baltimore Hotel, Baltimore, December 1-3, 1947.

Chemical Industries Exposition, Grand Central Palace, New York, December 1-6, 1947.

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FOR ROACHES and RATS

SINCE 1874

J-O Phosphorous Paste is so compounded as to eliminate the hazard of fire and possesses advantageous qualities peculiar to itself. A properly made **Phosphorous Paste** such as **J-O** is absolutely safe to use. It cannot burn or set fire to other substances.

Phosphorous, however, remains basic in the compound because it is the most toxic chemical used in pest exterminating, being more toxic than arsenic, strychnine or thalium. Approximately one-tenth of a grain will kill a rat. Phosphorous is a slow poison, taking from 6 to 18 hours to kill. Due to its slow but positive action, the rat succumbs to this poison. He becomes very uncomfortable and, seeking fresh air and water, in most cases, leaves the premises and dies in the open.

For all species of roaches, this product is **UNEXCELLED.**

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Purdue University,
Lafayette, Indiana.

". . . You had in mind the busy student or business man, who in this streamlined age does not have time to wade through voluminous paragraphs of detailed instruction on a given subject. You have accomplished wonders in brevity, thus making your text book more valuable because of its conciseness. In all my reading, I have never yet found in any library or book store, a book covering the subject in the practical way in which you have presented it. The book 'Natural Gestures and Postures In Speech' fills a particular niche long neglected by writers and instructors on this important feature of education."

J. H. MacEachern, Secretary,
American Temperance Society,
State of Missouri.

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Natural Gesture & Posture Assn.

1200 Oak Street **Room 201** **Kansas City 6, Mo.**

nation Association at the annual meeting held in Atlantic City. He succeeds Dr. John P. Weber who became a member of the executive committee.

High Prices

Reports according to the "New Yorker" show that customers throughout the country are putting up a stiff resistance against high prices. They are greatly aided in this campaign by a shortage of funds.

Mosquitoes

Dr. C. H. Curran of the American Museum of Natural History, N. Y., predicts that mosquitoes will appear two weeks earlier than usual this year in the New York area. Moderately warm weather during April is the reason.

Grasshopper Thermometer

To increase the farmer's know-how in controlling grasshoppers, two scientists have come up with a thermocouple 5/1000 of an inch in diameter which takes the insect's temperature. It is believed there is an important relationship between the intensity of sunlight, air temperature, body temperature, and where and when the pests do their eating. Knowing in advance where the grasshoppers will feed, the farmer can spread the poison bait as a saving of time and money. Grasshoppers eat millions of dollars in crops annually.

— The Skyliner

Westinghouse Insecticide Ad Claims Modified

The Federal Trade Commission said last week it has approved a stipulation in which the Westinghouse Electric Corporation, New York, agrees to stop misrepresenting the effectiveness of an insecticide dispenser known as the "Westinghouse Bug Bomb".

An Electric Rat Trap

An electric rat trap is the latest news in the rodent catching business. Now that manufacturers have tried wooden traps, metal and wire traps, and poison of all kinds, they are trying to catch them with an electric device. The animal enters a tunnel, breaks an electric photo cell beam which trips doors at each end of the tunnel, trapping the rat. A small door opens and a light turns on, giving the rat an apparent chance to flee. He runs up a ramp where an electrocution plate clamps down on him and enough voltage is passed through the animal to kill it. The body is then dumped into the side container and the trap resets itself. They say as many as 60 rats have been caught and killed this way in a single night.

Pacific Insecticide Institute

Pacific Insecticide Institute held the most successful meeting of its history on May 13th at the Clark Hotel, Los Angeles, according to Mr. W. C. Morrison, Chairman of the Institute.

Mr. Morrison reported to the institute on the very satisfactory growth of membership and effective work with State and Federal regulations pertaining to insecticide material. Guest speakers at the summer meeting were Dr. A. M. Boyce, Professor of Entomology and Entomologist Citrus Experiment Station at Riverside, and Roy E. Campbell, Entomologist in charge of Laboratory Bureau of Entomology and Plant Quarantine, who presented the results of their tests on new insecticide materials and equipment. Dr. J. N. Roney, Extension Entomologist at University of Arizona, discussed new materials tested in Arizona and Allen B. Lemmon, Chief, Bureau of Chemistry, California State Department of Agriculture, discussed problems of the State of California relating to economic poisons labelling. A general discussion of each subject was held by the Institute.

Necrology

CONDOLENCES: The mother of William Farrell, operator of the Effective Exterminating Co., Brooklyn, N. Y. and treasurer of the Professional Exterminators Ass'n., passed away on May 15.

CONDOLENCES: Mrs. Lewis, wife of Dave Lewis of the H. D. Hudson Mfg. Co., Chicago, Ill., died suddenly on May 14.

Uses "Love Call" to Trap Rats

Vancouver, B. C.—It's springtime in Vancouver, but young rats whose fancy lightly turn to thoughts of young lady rats may be in for a tough time. A rat exterminator who calls himself the Pied Piper is going to use the seasonal urge in his work. He has made recordings of the mating squeaks of the females and he intends to play the disks in rat-infested buildings to lure the rats into a trap. The idea is the same as that employed by hunters who sound a moose call to attract their prey.

Sprayer Corp. of America

In the interest of better service to the customers, the Sprayer Corp. of America, Evanston, Ill., have moved into their larger and new location, 1712 Payne St. Best wishes.

L. S. Bridges, Entomologist Honored

L. S. Bridges of Baton Rouge, La., received the annual State-Times-Morning Advocate's "Golden Deeds Award," in a special ceremony in the house of representatives at the State Capitol on Thursday, May 15. A reception followed the presentation in the lobby and the ceremonies were broadcast.

The award, which has been presented annually since 1940, is given each year to the person in the community who has done what the Baton Rouge Inter-Civic Council considers the most outstanding work for the community.

Some of Mr. Bridges' numerous activities include serving as committee chairman, Boy Scouts; parish chairman, Camp Fire Girls, co-chairman, March of Dimes; co-chairman, American Red Cross; to say nothing of the invaluable assistance he has rendered the pest control industry in the Southwestern area.

Heartiest congratulations, "Bugs," on an honor richly merited. No one could be more deserving.

Chlordane

To Pests and Their Control:

Our attention has been called to the publication of an item in the current May 1947 issue of "Pests" designating Chlordane as the trade mark name for the insect toxicant being manufactured by Velsicol Corporation. This is a factual error as Chlordane is the short common name which has been registered by the U. S. Department of Agriculture for the chemical with the empirical formula C_{10} H_6 Cl_8, which is also being manufactured by Julius Hyman & Company under the trade name OCTA-KLOR.

We will appreciate your giving this information publicity in the next issue of "Pests".

Yours very truly
JULIUS HYMAN & CO.

Commonwealth Sanitation Opens Eastern Offices in New York

The Commonwealth Sanitation Company, with executive offices and plant in Pittsburgh, Pa., announces the opening of an Eastern Division at 507 Fifth Avenue, New York City. With the establishment of this new office, Commonwealth service is now available in Buffalo, N. Y., Erie, Pa., Johnstown, Pa., Wheeling, W. Va., and Youngstown, Ohio, in addition to Pittsburgh and New York City.

The activities of the New York branch will be concentrated in New York, Connecticut and New Jersey. According to Mr. Lloyd Crosby, President, all Commonwealth offices are completely staffed and equipped to handle any type of sanitation problem, and specialize particularly in constant year 'round pest control for hotels, restaurants, business and industrial establishments, and public institutions.

Mr. Stanley Fox, for many years prominent in the field of pest control, has been appointed managing director of Commonwealth's Eastern Division. Mr. Fox brings to his new duties a wealth of experience in sanitation work and is especially familiar with conditions in the area covered by the operations of the New York office.

It's A Second Girl For The Delaplane's

Apologizes W. K. Delaplane, Jr., of the Illini Pest Control and Service Inc., Urbana, Ill., "I don't know why I have been so lax in announcing the birth of my second daughter on February 7. This is purely for your own information and not for possible publicity. We named her MARY DIETRA and she weighed 9 pounds, 4½ ounces at birth."

Congratulations, if unavoidably belated in this instance, are always in order, and we hereby tender them to the Delaplane family!

Two months old, now, is the daughter of Ernest and Mrs. Falke, born April 16. Mr. Falke is head of the ABC Exterminating Co., Ithaca, N. Y. Congratulations and well wishes!

Pomerantz Addresses Doctors Group

Charles Pomerantz*, discoverer of the mouse mite causing Rickettsial Pox**, spoke before a group of approximately 25 physicians at the Skin and Cancer Hospital, N. Y., on Thursday morning, May 15. His talk, the second such at the hospital, was interlarded with colored lantern slides and covered the chain of events which led to the finding of the mite and subsequent developments which enabled the U. S. Public Health Service to establish it as the causative agent in Rickettsial Pox. Mr. Pomerantz also touched on the rat mite and various tick-caused diseases. He stressed particularly the close inter-relationship between public health and effective pest control, the indispensible role of the NPCA under the aegis of its secretary, William O. Buettner, and the constructive nature of the various regional PCO Conferences, short courses, etc., given at Purdue, Massachusetts State College, University of Montreal, Rutgers, Louisiana State University and other Institutions of equal repute and standing.

Dr. A. A. Fisher of Woodside, N. Y., visiting physician at the hospital, acted as chairman of the meeting. Before introducing Mr. Pomerantz, Doctor Fisher declared that Rickettsial Pox might become a nationwide problem this year and outlined the medical history of the disease, symptomtically and curatively and its differentiation from other Rickettsia.

*Bell Exterminating Co., New York, N. Y.
**December, 1946 Pests

"Many a man who is a big bug in the office is nothing but an insect at home", a philosopher declared somewhere . . .

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- Good household insecticides can be made without Pyrenones but there is little point in trying to do so when it is so much simpler and more economical to make even better ones with Pyrenones.
- The supply of Pyrenones was not adequate in time to permit their general adoption for 1947 formulations but usage has been on a sufficiently broad scale to demonstrate that their effectiveness and safety exceed expectations.
- Pyrenones are now available in ample if not unlimited amounts. The next few months will set the pattern for 1948 use. There is time for thorough study and trial of the Pyrenones and their place in your present and future plans.

* Reg. U. S. Pat. Office

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Plant and Laboratories: BAYONNE, NEW JERSEY
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Joint Analytical Studies Arranged

Industry and government will cooperate in working out satisfactory ways to analyze the new insecticidal chemical benzene hexachloride (hexachlorocyclohexane).

This was agreed March 19 in Washington, at a meeting attended by technical representatives from 12 producing companies and by 19 officials and technicians from the Bureau of Entomology and Plant Quarantine, the Insecticide Division of the Production and Marketing Administration, the Food and Pharmacology Divisions of Food and Drug Administration, the Bureau of Ships, the Naval Research Laboratory and the Chemical Warfare Service.

Samples and the results of their analysis will be exchanged between participating companies and agencies, with the BEPQ acting as central receiving and distributing point. The samples will be studied and analyzed by as many methods as possible. Each company submitting a sample should supply 500 grams, which the BEPQ will break up into 20-gram portions and send out under code numbers to each participating company or agency. Reports resulting from the various tests of these will be compiled and distributed to participants.

Four tentative methods of analyzing the technical (commercial grade of benzene hexachloride will be given primary attention.

Infra-red spectroscopy, it was stated, is useful for determining the content of the gamma and other isomers, but not readily applicable to mixtures of benzene hexachloride with other insecticides nor to insecticidal solutions.

The cryoscopic method determines the composition of a mixture by determining the depression of freezing point which that mixture produces in a series of solvents. Technicians said it is applicable to perhaps four of the isomers.

Partition chromatography partitions the components of benzene hexachloride between nitromethane and hexane.

Biological assay, tried with house flies and milkweed bugs, has given a gamma isomer value appreciably greater than that obtained by infra-red spectroscopy, leading to the "gamma isomer equivalent."

Explaining the need for such continued studies, it was pointed out that while chief attention has been focused on the gamma isomer, the other isomers and components in the commercial product also contribute to its insecticidal value; that the value which each contributes varies; and that the technical products from different sources usually vary in the proportion they contain of the several isomers and byproducts.

Specificity or variation in toxicity of the technical product to different insects was also recognized, and the need for entomological studies of the gamma isomer in combination with various proportions of the other isomers.

The conference was arranged by S. A. Rohwer, chairman of the Interdepartmental Committee on Pest Control, at the request of the AIF Association.

Companies or agencies in position to, and interested in, participating in the cooperative program, may secure information on arrangements through the chairman of the Interdepartmental Committee.

AIF News

Rats Swipe Teeth

Francois Lake, B. C.—A pair of false teeth was missing from Joe Corbett's cabin for more than two weeks. The set was found in a rat's nest under the cabin along with a pair of eyeglasses and several knives.

Editor's Note: Two rythmic interludes by Purdue University's Dean F. C. Hockema, prepared especially for the occasion of the banquet given at the 11th Annual PCO Conference held at the University, April 7-11, 1947.

* * *

John June (Jitterbug) Davis keeps PCO's on the GO

Until about a quarter century ago
The PCO's were very scarce, you know.
The different pests destroyed each other
So it was not necessary for the PCO's to bother.
But eventually certain pests got the upper hand,
It was then that PCO's took a stand.
In many instances they didn't know what to do,
So called on J. J. Davis of Purdue.
This is the eleventh annual meeting on pest control.
Bigger and better PCO's is the goal.
Here they study identification, methods, and fumigation.
New materials, controls, and other ammunition.
When a PCO learns his lessons good,
He knows that certain termites are fond of Hollywood;
He knows the different pests as well as their habits,
Especially those which multiply like rabbits.
For example, in one season a pair of flies can produce
5,598,860 flies if on the loose,
Then the flies would control the world and we would go.
But man still dominates, thanks to PCO.
Then, there are other horrible pests - the louse, the termite
Which always give the PCO's a good fight,
But anyway, we enjoy life since you control the pests.
We salute the PCO's, J. J. Davis and the rest.

* * *

Bill Buettner

You should have seen bug-battler Bill Buettner jump,
When he heard ninety-nine footsteps, then a thump,
He was doing his thinking while sitting on a keg,
And it was then that he noticed the centipede with a wooden leg.
Bill was reminded of "Ten Nights In A Barroom."
His traveling companion was Davis, John June,
They were thinking of PCO's and making big plans,
And that is the reason you keep coming back as loyal fans.
Bill, you and Davis make a great pair,
You're always out in front with ideas to to spare,
You've planned a great Conference on new PCO ammunition
And made generous contributions to Pest Control education.
Keep up the good work — We're all for you,
Whenever you need help — just come to Purdue.
The oftener you come — the better we like it!
Bill, we salute you — if you see a pest — strike it!

National Sanitary Supply Association

The National Sanitary Supply Association just held their largest and most successful Merchandise Exposition and Convention ever, at the Morrison Hotel, Chicago, Ill., April 21-25th.

Left to Right—Jack Varley, Baird & McGuire, St. Louis, Mo., the retiring President. Leo J. Kelly, Executive Vice-Presidenut, National Sanitary Supply Association, Chicago, Ill. Jules Lovinger, Lovinger Disinfectant Co., Salt Lake City, Utah, the incoming President.

The following names are the new elected officers for the ensuing year.

President; Jules L. Lovinger, Lovinger Disinfectant Co., Salt Lake City, Utah.

Vice-President; Leo G. Peck, Peck's Products Co., St. Louis, Mo.

Executive Vice-President; Leo J. Kelly, Nat'l Sanitary Supply Assn.

Treasurer; Carl B. Lien, Lien Chemical Co., Chicago, Ill.

Secretary; Martin J. Peters, Moore Brothers New York, N. Y.

Regional Vice-Presidents;

East; Jack Gantz, Empire Brush Co., Port Chester, N. Y.

West; Wm. H. White, Wilhite Associates, Oakland, Calif.

Central; Mal Flanagan, Federal Varnish Co., Chicago, Ill.

South; Erwin Zaban, Zep Manufacturing Co., Atlanta, Ga.

Directors:

Jack Varley, Baird & McGuire, Inc., St. Louis, Mo.

Jim Longshore, Rex Cleanwell Corp., Brazil, Ind.

A. W. Newfield, Bobrick Manufacturing Co., Los Angeles, Calif.

J. Lester Brown, I. Edward Brown, Inc., New York, N. Y.

E. R. Moulder, Moulder-Oldham Co., Tulsa, Okla.

UNBIDDEN HOUSE GUESTS

by Dr. Hugo Hartnack

540 pages, 500 pictures, Weight 4 pounds.

"It is not a textbook—yet it contains a world of actual information, it is not A novel—yet it holds one's interest and supplies genuine amusement. The book covers a tremendous field. An Unbidden House Guest is considered to be any plant or animal that ventures on or within a dwelling. The scope of the material is still broader, since some of these housepests bring with them other plants and animals that cause human disease. Even if not studied, much general information can be obtained by even a casual scanning."

Price $12.00 plus 25 cents postage

Correction

Qualification of the statement that the use of "1068" insecticide-wise, appearing on p. 26 of the April issue (PEA meeting story) and accredited to J. Edwin Sameth, is in order. Mr. Sameth did not state, of course that "1068' (in itself) was flammable. On the other hand, he did declare that oil solutions incorporating "1068" as well as oil solutions of other insecticides used during the past few years were flammable.

Parenthetically it might be pointed out that since no one can apply "1068" Technical for any insecticidal use whatsoever, unless it is broken down into a solution or an emulsion, and since emulsions are obviously not very flammable, it only leaves the logical conclusion that oil solutions were the materials referred.

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Wiscone will make seeds or any other mouse bait more attractive and more easily located by mice, when mixed at the rate of 1½ ozs. to 100 lbs. bait.

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addressed us there

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SAFETY: Harmless to humans, animals, plants. Non-oily, non-greasy, no objectionable odor or fumes.

ECONOMY: Diluted 4 to 1 with inexpensive mineral spirits reduces cost to minimum. Covers 250-400 sq. ft. per gallon. Its rate of penetration is tremendous. Can be painted over. Acts as a primer.

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TERMICIDE NO. 46

Concentrated Emulsion

Kills and Controls Subterranean Termites.

Cut with Water 1 to 9 Makes Its Cost Nominal.

Write Today for Further Details and Prices.

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IMPROVED PYRIN #20

This attractively gotten up brochure, illustrated, discusses, among other things, Improved Pyrin No. 20, what it is, principal characteristics, knockdown, kill, its use in mill and stock sprays, pyrin-DDT combinations, etc.

John Powell & Co., Dept. P., 1 Park Ave., New York 16, N. Y.

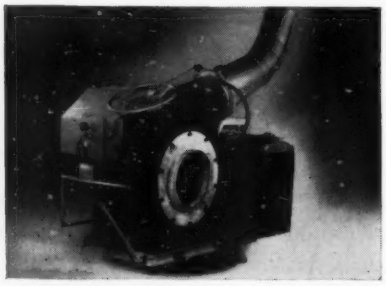
ANTU

Antu Leaflet discusses Antu as a rodenticide, what it is, how to use, how to apply, toxicity, etc.

JOHN POWELL & CO., Inc., Dept. P., 1 Park Ave., New York 16, N. Y.

AERO MIST SPRAYER

The Lawrence Aero Mist Sprayer Company of Greenfield, Massachusetts, has recently announced that their new Aero Mist Sprayer offers a revolutionary change in the application of insecticides



Highest trees as well as field crops are easily and thoroughly sprayed. The sprayer is light and compact weighing 1/3 less than old conventional power sprayers and is so designed as to be mounted on a 3/4 ton platform truck. One man can easily operate the sprayer as **all** controls are under finger tip control within easy range of operator's seat. At slight pressure of the operator's foot the sprayer can complete a 360° circle thus assuring complete coverage in every direction without troublesome backing and turning about of the truck.

Other features are an aero dynamically designed directional air nozzle, Benway spray jets that inject insecticide concentrates into high speed air currents, Novo water cooled engine, 47 gallon concentrate tank sufficient for 3 to 4 hours of spraying and air-flo baffle plates to secure directional and controlled application of air borne spray particles.

Of special interest to those concerned in the care and protection of trees and shrubs is the claim that "mist spraying" with DDT at the correct time of the year will kill the elm bark beetle, a carrier of the Dutch Elm Disease. Gypsy moths, Japanese beetles, canker worms, plus practically all other defoliators are effectively and economically controlled.

Mosquitoes, black flies, house flies and many other obnoxious insects can be suppressed or eliminated in and around golf courses, ball parks, schools, playgrounds, swimming pools, and picnic grounds by use of atomized DDT solutions.

The Lawrence Aero-Mist Sprayer, it is stated, is being effectively used to suppress flies and mosquitoes and other carrirs of human diseases by spraying entire communities and mosquitoes and other carriers of pests.

For further details write to the Lawrence Aero-Mist Sprayer Company, Dept. A, 59 Federal Street, Greenfield, Mass.

STANLEY'S PATENTED PIGEON-PROOFING

Economically, Permanently, Positively and **Lawfully** from any type of structure.

Stanley's Roofing & Building Service, Inc.

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INSECTICIDES

Insecticides. 8-page bulletin on fully automatic blending systems for "More Effective Insecticides," with photographs of comparative tests on well-known types. **Bulletin 1-846.** Sprout-Waldron & Co., Muncy, Pa.

ODORS

Odors. 11-page booklet on "Problems of Odors in Institutions" describing methods and materials available to combat them. Hospital Bureau of Standards and Supplies, Inc., 247 Park Ave., New York 17, N. Y.

MAGNIFIERS

Literature lists and illustrates comprehensive tests on well-known types. **Bulletin 1-** magnifiers of invaluable assistance to every PCO in his daily activities.

Schoenig & Company, Dept. P, 8 East 42nd Street, New York 17, N. Y.

RODENT ATTRACTANT

Extracted Peanut Product which, producer states, is the type of article used by many exterminators in sities for attracting rodents and getting them into traps. Producer further states the peanut product will not freeze, dry up or lose its strength, which means that when exposed to the air it remains pungent and aromatic for a long period. Peanut butter, on the other hand, it is stated, has the disadvantage that it freezes solid and is almost impossible to use in winter, because when it solidifies, its scent properties are very much cut down.

Sparhawk Co., Sparkill, N. Y.

NEW MSA FULFACE DUST MASK FOR ALL-OVER HEAD PROTECTION AGAINST DUSTS

The new MSA Fulface Dust Mask, it is stated, combines complete facial and respiratory protection against dusts - without obstructing vision, and is made by Mine Safety Appliances Company. Comfort and safety where nuisance or harmful dusts affect the eyes as well as the respiratory system are assured by the gas-tight seal of the MSA Fulface Mask and its replaceable filters.

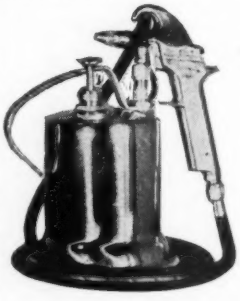
Lightweight and flexible, yet durably constructed, the Fulface Mask covers the entire face, conforming snugly to facial contours. Head bands are easily and quickly adjustable.

Twin large-area throw away filters remove dusts efficiently yet offer very low breathing resistance. Inexpensive and easily replaceable, the filters are encased in durable, lightweight aluminum containers which are placed low at the sides of the Fulface Mask to permit unobstructed vision. A rubber exhalation valve, positive in action, provides breathing ease and quick drainage of moisture.

A large single clear plastic lens permits wide-angle vision to the wearer of the MSA Fulface Dust Mask. Rubber air deflectors direct incoming air over the inside surface of the lens, preventing fogging

For Bulletin No.CR-19 on the new Fulface Dust Mask write this publication or direct to Mine Safety Appliances Company, Braddock, Thomas, and Meade Streets, Pittsburgh 8, Pa.

NEW SPRAYER FOR PCO USE



This new sprayer, it is stated, is made to fill the needs of the professional Pest Control Operator in applying the new residual insecticides. One quart brass tank, is ruggedly constructed, with self contained pump, and a convenient length of removable hose connecting the tank to a handy pistol grip outlet.

The sprayer as illustrated is light in weight, well balanced and is easily carried in the hand, or hooked into belt, freeing one hand for moving objects or for using a flashlight. Flexible hose with pistol grip control outlet allows free motion of the arm and makes application easy to difficult areas. The control outlet comes equipped with a fine pin stream nozzle (best results obtained when operated at low pressure) which, it is stated, uses a minimum of material.

BYRNE SPRAYER CO., Dept P, 3108 Georgia Ave., N. W., Washington 10, D. C.

INSECT-O-LITE

A device impregnated with DDT crystals which, it is stated, volatilize and are dispersed invisibly through the room as a result of the heat given off from an ordinary light bulb. As a result, it is stated, insects, which are attracted to light, contact the shade, absorb DDT and die. Effective, it is claimed, against flies, mosquitoes, silver fish and all other common crawling and flying household insects normally affected by DDT. Made in two models: "Snap-On" shade for use with existing floor and table lambs, etc.; Portable for use outdoors and indoors where portability is desired. Insect-O-Lite should make an effective re-sale item and may be of possible value service-wise.

SCIENTIFIC EXTERMINATING CO., Dept. P., 1 E. Fordham Road, New York 58, N. Y.

METHYL BROMIDE

What it is; what it does; how to use it. Described are dosage schedule for various type pests, methods of application and preliminary precautionary measures.

WRITE WESTVACO CHEMICAL CO., Chrysler Bldg., N. Y. C.

Please Notice

By now our subscribers in the States have received the notice "Sorry-We must" regarding the increase subscription rate, effective with the July issue.

Please read the notice carefully and renew at once before the July issue. Renewals received now will apply to your present subscription and extend from the expiration date.

Business Opportunities

(Classified)

RATES — For individuals seeking employment, 5c per word, minimum $1.00. All others 10c per word, minimum, $2.00. All advertisements must be in the hands of the publishers seven days before publication date and must be accompanied by cash or money order for payment in full. The publishers are not responsible for any false or misleading advertisements.

Replies to advertisements where box number only is indicated should be addressed c/o PESTS, 1200 Oak St., Kansas City 6, Mo., giving box number as well.

For Sale: Well established pest control business. Termites and general pest control. Gross sales in 1946, $50,000.00 Good profit. Price, $30,000.000 including buildings, and inventory. Located in California. Box 9 Pests.

Want to buy established exterminating business in Eastern part of United States. Please give price and net monthly business. Pests Box 2.

Salesman Wanted with extensive following among termite control operators. High grade chemicals. All territories. Box 3 Pests.

For Sale—150 Drums Pentachloro Phenol 13c (by weight) solution. 50c per gallon, f.o.b. West Coast. Box 4 Pests.

INCREASE AND EXPAND YOUR BUSINESS

Old established exterminating, fumigating and termite control firm for sale. New York City and Westchester territory. Includes chemicals, equipment, contracts. Nets $15,000 yearly. Increased business assured. Price $25.000. Cash $17,500. Balance monthly. Only those interested in buying need apply. Write Box 25 Pests.

LEAVE IT TO

POWELL

TO BRING OUT A

NEW BASIC PYRETHRUM EXTRACT!

FOR ALL POWCO BRAND REG. U.S. PAT. OFF. PYRETHRUM BASED INSECTICIDE PRODUCTS

PYRIN R, AEROSOL FORMULAS

PYRIN NO. 20, PYRIN D-20,

Yes, this new, clarified Pyrethrum Extract made by a brand new Powell process is so good that we are making it the basis for *all* POWCO BRAND Pyrethrum Base Products—Pyrin No. 20, Pyrin R, Pyrin D-20, Aerosol Formulas, etc.

Manufacturers will find this new basic Pyrethrum Extract an ideal base for attractive packaged products. It is also available in concentrated form for specialized uses. This new Pyrethrum Extract is low in Freon insolubles making it especially adaptable for aerosol manufacturers.

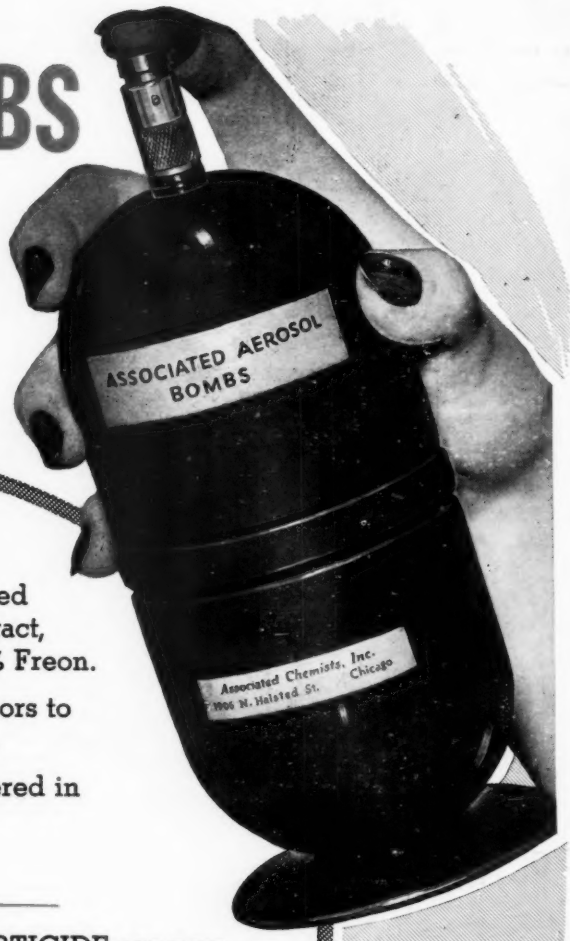
Write, wire or phone for samples and information.

John Powell & Co., Inc.

BASIC MATERIALS FOR INSECTICIDE MANUFACTURERS

ONE PARK AVENUE • NEW YORK 16, N.Y.

AEROSOL BOMBS FOR RESALE



Filled with Standard Approved Insecticide—2% Pyrethrum Extract, 3% D.D.T., 10% Solvents and 85% Freon.

At prices which will enable Distributors to handle the bombs at attractive profits.

Supplied with Distributor's label if ordered in sufficient quantities.

Packed 24 to a Shipping Carton.

HI-TOX, MORTICIDE and SUPER-MORTICIDE are now obtainable with D.D.T. added. NO INCREASE IN OUR PRICES.

D.D.T. Solutions containing from 5% to 50% D.D.T. Technical Grade.

D.D.T. Powders with 10% to 50% D.D.T. Technical Grade.

MORTOLIN—Concentrate for Moth-proofing Compounds.

Write our office nearest you for full particulars.

Associated Chemists, Inc.

1906 N. HALSTED STREET
CHICAGO 14, ILLINOIS

EASTERN OFFICE: Velsor Wright Company, 8 West 40th St., New York 18, N. Y.
TEXAS OFFICE: The Carroll Company, 1323 Wall Street, Dallas, Texas